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Abstracts

(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)

FIBERS A

TEXTILE FIBERS AND THEIR USES. Katherine P. Hess. 4th ed. Philadelphia, J. B. Lippincott Co., 1949. 599 p.

The fact that this book is the fourth edition consisting of completely revised text of former issues, has proven the vitality of not only the subject but also of the manner of presentation by the author. It is essentially a book for classroom use, and its chapter divisions are arranged to impart progressive information about fibers, their application and their processing. Section I consists of five counts and covers such subjects as "How Fibers are Constructed," "How Yarns are Constructed," "How Dyes are Applied to Textiles" and "How Design is Applied to Fabrics." Section II consists of six units and covers information on the classification and properties of fibers, which are later divided into separate studies on wool, linen, silk, cotton, bast and leaf fibers, and also synthetic fibers. Section III consists of three units, and is a practical analysis of the consumer and the textile market, how to select fabrics for clothing, and the care of fabrics. Class problems and a very complete story of the jacquard machine are included in the appendix.—*Rayon & Syn. Tex.*

Natural fibers A 1

AMERICAN COTTON HANDBOOK. A. R. Macormac, H. R. Mauersberger & Gilbert R. Merrill. 2nd ed. New York, Textile Book Publishers, Inc., 1949. 940 p. $9.50.

This new text covers the material facts of the industry from the historical background of cotton cultivation and machinery development through a comprehensive cotton bibliography. Outlines of all the important functions of the industry and a complete picture of its processes from raw cotton to finished goods are given. A chapter on cellulose and the cotton fiber traces the growth, physical properties of the fiber and develops an empirical formula of cellulose structure. The cultivation and varieties of the cotton plant are discussed in another chapter. The manufacturing processes from ginning and classing through weaving are covered, as are: the manufacture of cotton knit goods and the bleaching, dyeing, printing and finishing of cotton fabrics; recent developments such as resin-finishing and continuous processing; the latest methods and standards for physical and chemical testing of both fiber yarn and fabric. In the chapter "Nomenclature of Cotton Dyes," an alphabetical list of trade names, giving the manufacturers, is arranged by classes according to fastness and dyeing properties. A bibliography of American and English books, listings of manufacturers' literature, U. S. Government publications, directories, yearbooks, catalogs, dictionaries, trade associations, cotton magazines and current cotton films completes the text. The language is technical or non-technical as the subject requires. The book should appeal alike to the technician as a standard reference work and to the layman as an easily understood guide to the industry.

COTTON IN THE LAUNDRY INDUSTRY. Frank A. McCord & John A. McCrossan, Jr. Memphis, Tenn. Nat. Cotton Council of America, 1949. 30 p. Free.

The use of cotton in the laundry industry is discussed with reference to 1) materials used, size of market, and trends in consumption; 2) quality considerations; 3) price; 4) research problems and suggestions; and 5) sales promotion and educational activities.

Method of making microporous sheet material. James J. Raymond & Wm. H. Lehmberg (to American Felt Co.). USP 2 474 201, June 21, 1949.

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A method of making microporous sheet material includes the felting of selected loose wool fibers into interlocking relation in a felt sheet, filling the felt sheet under pressure with an uncured elastomer and thereby producing a solid self-containing matrix with the wool fibers solidly embedded in it. The elastomer filling on the sheet is then cured, and the wool fibers are dissolved. A flexible sheet is thus produced of chamois-like texture having pores left by the fibers removed from the otherwise solid matrix. The resultant product may be used for filtering, hospital sheeting, surgical bands and supports, etc.

Natural silk: electron microscopy. H. Zahn. *Kolloid-Z. 112,* 91-4 (Feb.-Mar. 1949). *in German.*

The histological fine structure of natural silk fibers was investigated by means of the electron microscope. Bacterially treated fiber specimens could be separated mechanically into individual fibrils, 250-500 A in width. Microtome sectioning of silk treated with Ag_2So_4 solution at 100°C also shows fibrils, these being 40-90 A in width.

New fiber to replace jute and sisal. Anon. *Can. Textile J. 66,* 45 (Aug. 19, 1949).

The Australian Museum of Technology and Applied Science has announced production of a fiber from the Canna lily suitable for the manufacture of bags and twine. Canna fiber has never been investigated before because of the high water content of the plant. Despite this disadvantage, it produces a percentage of fiber equivalent to sisal and matures in 12 weeks as against years for most other fibers. A simple mechanical process to isolate the fiber has been developed which takes advantage of the high water content.

Specialty fibers. H. Stansfield Haigh. *J. Textile Institute (Proc.) 40,* P794-813 (Aug. 1949).

The specialty fibers consisting of cashmere, camel hair, alpaca, vicuna, and mohair are discussed. The prime sources for these fibers, their history, and the uses to which they are put are considered.

Structure of textile fibers. VI. Chemical structure of wool fiber. R. Consden. *J. Textile Institute (Proc.) 40,* P814-30 (Aug. 1949).

The chemistry of wool is discussed with respect to the structural formulas and how the amino-acids are joined to form more complex molecules or structures. The amino-acid composition of wool is considered in detail with the individual amino-acids methionine, tryptophan, serine, threonine, etc. discussed individually. Also discussed in detail is the length of the wool chain, and the physical and chemical properties of the wool fiber.

Artificial fibers A 2

Alkali-soluble fibers. Anon. *Chem. Ind. 65,* 37 (July, 1949).

Fibers that are soluble in dilute alkali are made in Great Britain from salts of alginic acid and in this country from heavy metal salts of carboxymethylcellulose to provide "scaffolding" fibers to supply the so-called "missing threads" in specially woven fabrics where dissolution of the fiber leaves a planned scarcity of threads.

Artificial fiber. James W. Hall (to American Viscose Corp.). USP 2 476 293, July 19, 1949.

A stretched, inflated regenerated cellulose fiber of from about 1 to 15 deniers is claimed. The fiber shows in cross-section, along at least a substantial portion of its length, a web-like network constituted by a plurality of distinct radiating partitions which separate and define a plurality of distinct individual voids between an internal point and the peripheral wall of the fiber. The partitions constitute an internal support for the peripheral wall of the inflated fiber. The fiber has a dry tenacity of approximately 2 gms. per denier.

Manufacture of artificial textile fibers. Antonio Ferretti. Can. P. 448 499, May 11, 1948.

As an article of manufacture, an artificial textile fiber constituted of the combination of both soya protein and milk casein which, in mixture, have been maturated, spun, coagulated and insolubilized.

Manufacture of artificial textile fibers. Antonio Ferretti. Can. P. 448 500, May 11, 1948.

A process for the manufacture of artificial textile fibers consisting essentially of casein, in which casein is dissolved in an alkali or alkalis to form an alkaline colloidal solution, and the fibers obtained therefrom, by passing the solution through spinning nozzles, are coagulated in a bath comprising the residue from the coagulating baths employed in the manufacture of viscose rayon (cellulose xanthogenate) the residue containing sodium sulfate and having a density greater than 1.18 and a sulfuric acid content greater than 25 grams per litre of bath.

Manufacture of glass fibers. Glass Fibers Inc. Australian P. 131 954, May 13, 1946.

To produce glass fibers of constant diameter of the order of .00025″, stock material is fed into, and melted in a heating chamber having apertures leading from the inside to the outside thereof, the molten material being extruded under pressure, and fibers drawn therefrom, while the relation-

ship between the fiber drawing speed and the speed of extrusion is maintained so that globule like accumulations form and are maintained at the discharge end of the apertures, the fibers being continuously mechanically drawn from each of the globule-like accumulations. A heating chamber has apertures through which the molten material is extruded, connected through ducts to a pressure source having a control mechanism whereby a constant pressure difference is maintained at both ends of the apertures; a further control mechanism such as a contact rod controlling a motor driving rollers being provided to automatically feed stock material into the chamber to maintain a constant level of molten material. The chamber is heated by a high frequency coil under the control of a thermometer type switch while the drawn fibers are wound on a spool at a constant drawing speed. In a further form of device the constant pressure difference is obtained by providing a sub-atmospheric chamber below the apertures, while in another form the extrusion pressure is obtained by centrifugal force.

Manufacture of high polymer fiber-forming esters. Imperial Chemical Industries Ltd. Australian P. 131 768, Nov. 12, 1946.

A mixture of 1:5- and 2:6- or 2:7-naphthalene dicarboxylic acid or an ester-forming derivative thereof is heated with at least one molecular proportion of a glycol of general formula of HO $(CH_2)_y$ OH, wherein y is between 2 and 6, or a low molecular product obtainable from the ingredients of the mixture, the heating being such that at least during the later stages of the reaction, volatile by-products are removed and being continued until filaments formed from a melt of the product can be permanently extended by cold-drawing into useful fibers.

Many changes in denier and filament numbers of American rayon and synthetic yarns. H. R. Mauersberger. *Rayon & Syn. Tex. 30,* 55-7 (Sept. 1949).

The semi-annual report of changes that have occurred in the domestic production of viscose, acetate and cuprammonium rayon yarn is presented.

New synthetic fibers. *Chemurgic Digest 6,* 18 (July, 1949).

Two new synthetic fibers, one made from cottonseed protein and the other from chemically modified cellulose, have been produced experimentally by scientists at the USDA Bureau of Agricultural and Industrial Chemistry's Southern Regional Research Laboratory. The protein fiber

is about ¾ as strong as wool when dry, feels soft to the hand and has good dyeing characteristics. The cellulose fiber is spun from a sodium carboxymethylcellulose and the salts of certain metals, including lead, copper, and aluminum.

New synthetic fibers. G. Preston Hoff. *Rayon & Syn. Tex. 30,* 65-7 (July, 1949); 65-7 (Aug. 1949).

See TTD: *6,* 595.

Novel effects possible with soluble yarns. J. Menkart. *Textile World 99,* 120-1, 208, 210 (Aug. 1949).

The development by the British of alginate rayon, soluble in a weak alkali solution, makes possible the production of new fabrics and effects and the simplification of manufacturing methods of existing materials. The yarn can be used in combination with other yarns to aid in weaving, and then dissolved out, or used to separate articles during manufacture, such as socks with a course or two that will dissolve out during scouring. Illustrated with pictures of fabrics and effects produced with the yarn.

Polyethylene as a textile material. Wm. P. Crawley, American Viscose Corp. *Rayon & Syn. Tex. 30,* 91-3 (Sept. 1949).

The properties and uses of polyethylene monofilaments are reviewed.

Procedure for the treatment of certain marine algae for the production of algine, alginates, salts of algine and iodine. Paul Gloess. French P. 931 294, Oct. 6, 1947 (through *Bull. de L'Institut Textile*).

The process is applicable to marine algae of the *phaeophycee* group, especially the family of Laminanacees. The algae, preferably in the fresh undried state, are shredded, then macerated in a current of water, which dissolves the soluble matter. They are then transformed successively into pulp, into a paste of algine, then into flakes, and finally, after screening, into a powder. The pulps may also be mixed with a concentrated solution of Na_2CO_3 to produce crude sodium alginate.

Process and products for making articles of cellulose. E. I. du Pont de Nemours & Co. French P. 924 484, Mar. 10, 1947.

Ferrous sulfate is added to the bath used to coagulate viscose. This increases the optimum spinning tension, thus generally improving the spinning operation, giving a high tenacity, a desirable elongation and a greater resistance to knots. The addition of $FeSO_4$ is advantageous in all viscose

spinning processes in baths acidulated with H_2SO_4 under a tension of at least 0.3 g per denier, and avoids the formation of cavities. Examples and tables are used to present diverse applications of the process.

Review of continuous viscose spinning machines. Paul W. Frisk. *Rayon & Syn. Tex. 30,* 49-52 (Sept. 1949).

This is a review covering the Kuljian process, the Industrial Rayon Corp. system, the Nelson system and the pot spinning method.

Synthetic fiber development. H. Rein. *Melliand Textilber. 30,* 243-46 (June, 1949) ; *in German.*

The author describes the historical development of fibers since the production of the first synthetic PeCe fiber in 1934 and points out reasons that caused the work in that field in Germany and in the U. S. to move at first in 2 totally different directions. In that connection the "undoubted priority" that belongs to Germany in the invention and development of acrylic fiber are brought out.

Yarn. Carl R. Dolmetsch (to Camille Dreyfus). Can. P. 448 794, May 25, 1948.

An improved continuous-filament yarn comprising at least 2 separately formed yarns blended together, the separate yarns being longitudinally displaced with respect to each other to the extent that a portion of one yarn having a certain dye condition is in contact with the other yarn at a place having a different dye condition.

YARN PRODUCTION B

Control of humidity in woolen and worsted processing. Anon. *Fibres 10,* 302-4 (Aug. 1949).

In order to achieve the best results in making woolen and worsted yarns, adequate control of relative humidity must be had. Correct RH is also essential for proper storage, blending, and spinning of woolens. A direct reading humidity apparatus is described. This apparatus employs 2 "dry" and one "wet" electrical resistance thermometers. The RH is compensated for temperature and read directly on a distant indicator or recorder.

Five-stage worsted process. Anon. *Am. Wool Cotton Reptr. 63,* 16-17, 19, 51 (Sept. 8, 1949).

A detailed examination of the Saco-Lowell shortened method of processing worsted fibers is presented. Features of the system include: elimination of the use of the lap winder; perfected baller motion and baller creel; a newly designed top motion; positive delivery; anti-friction bearings; fixed position of rolls and aprons; and roll and apron construction that forms wide, yielding, and cushioned control over fibers. The system will handle fibers up to 6 inches.

INTRODUCTION TO THE STUDY OF PRINTING. W. E. Morton. London, Longmans Green and Co. Ltd., 1949. 245 p. Price: 16s. net.

More than ten years have elapsed since the first edition of this book was published and as the author points out in his preface advantage has been taken of the opportunity to make minor amendments to the mode of presentation and the re-writing of certain parts in the light of developments that have taken place since 1937. Most of the alterations occur in the first part dealing with raw materials and especially in the chapter on rayon, where, the author states, because of changes that have taken place during the past decade, a difficulty has been to avoid over-elaboration. . . . The author's aim has been to direct the student's attention to the basic principles underlying the processes in course of yarn manufacture and to show how various modern machines have been evolved from the original hand appliances and the influence on the machine of the character of the raw material. In other words, this is a preparatory work designed to provide a background for the student before he proceeds to more advanced studies of a more specialized nature.—*Textile Mfr.*

Processing rayon cut staple. Anon. *Textile Mfr. 75,* 325-7 (July, 1949).

While doublings do much toward effective blending, it is noticeable in working color blends that unless weighing devices are used on the blending hoppers "patchiness" or "stripping" may occur, even after 3 passages of drawing. In processing staples longer than the conventional 1 7/16 in. the speed of the carding cylinder must be reduced 150/160 r.p.m. to prevent breakage of the fibers. Extra-wide roller beams and special roller stands are necessary on draw frames to accommodate longer staple lengths. In the ring frames the well-known 4-roller system meets most requirements, but single apron systems have been adopted where additional fiber control is desirable.

Some factors affecting quality production in rayon mills. R. Bouvet. *Brit. Rayon & Silk J. 26,* 61, 63 (Aug. 1949).

(Taken from a paper presented before the Ameri-

can Association of Textile Technologists.) Relative humidity should be between 55% and 60% for efficient operations. Above that, the yarn loses 1% tensile strength for each 1% increase in RH. A condensed table of maximum tensions for filament viscose rayon is given. Larger cakes have presented problems in drying. These problems are discussed. Tensions and RH for pirn winding are discussed. Slashing subjects the rayon to simultaneous heating and stretching.

Tinting or fugitive identification of textile fibers. Wm. B. Uhler. *Rayon & Syn. Tex. 30,* 95-6 (Sept. 1949).

Methods of tinting staple and yarn are discussed; the various types of tints used are noted.

Carding and combing B 2

Carding method and machine. Stanley Wilkinson (to Winslow Bros. & Smith Co.). USP 2 478 799, Aug. 9, 1949.

A carding machine for textile fibers, particularly wool, comprises means for feeding a unitary layer of fibers, 2 sets of carding mechanisms disposed one above the other, each set including a rotary carding cylinder adapted to carry on its surface, above and partially about its axis, a stream of fibers. A plurality of fiber working means are associated with the cylinder and are located above it, each including a worker roll operative to comb a portion of the fiber stream from the cylinder and means for stripping the fiber from the worker roll and for returning it to the cylinder at the side of the worker roll toward which the cylinder rotates. Splitter means are located between the feeding means and the cylinders for separating the unitary layer of fibers into 2 fiber streams each of uniform lesser thickness than the layer and for transferring one of the fiber streams onto one of the cylinders and the other of the fiber streams onto the other cylinder. Means are also provided for simultaneously operating the 2 sets of carding mechanisms to separately card the 2 fiber streams.

Elimination of undue waste in flax tow carding. S. A. G. Caldwell. *Textile Mfr. 75,* 365-8 (Aug. 1949).

The main function of the card is to open up neps and lumps, and remove shive and other extraneous matter. These considerations demand careful regulation of machine loads with due regard for speeds and settings of the various opening and cleaning members. Increasing the fineness of setting and reducing the clearances between the opposing pin surfaces increases the carding action. To prevent loss of good fiber during carding a fiber recuperator is used which consists of an oscillating grid underneath the card which retains good fibers that are transferred back to the card rolls.

Lower speeds give fewer neps to California cotton. E. H. Helliwell. *Textile World 99,* 139, 212, 214 (Aug. 1949).

California cotton processed properly is equal in every way to Upland cotton of the same classified staple length. A minimum of opening and picker processing is used; beater speeds are lower; and pounds per card hour are reduced to 6 or 8. Counts of 40s, 50s and 60s can be made with grade A yarn appearance.

New lap roll holds 20% more cotton. Paul D. Emery & F. P. Hunsicker. *Textile World 99,* 137, 224, 226 (Aug. 1949).

Wood lap rolls weigh 6½ lbs.; the new Micarta lap roll weighs 3½ lbs. An operator handling a 22 lb. lap, gross wt., now handles 3 more pounds of cotton than formerly. The Micarta lap rolls also give every indication of lasting considerably longer than the wood rolls.

Stop motion for sliver condensers. John G. Kershaw & Patrick J. Malone (to Dominion Textile Co., Ltd.). USP 2 477 185. July 26, 1949.

The stop motion comprises an insulating sleeve between one of the condenser roll mating portions and its shaft; at least one electro-conductor having a peripheral face parallel to the axis of the shaft mounted on the shaft adjacent but insulated from the insulated condenser roll portion; and an electro-conductor mounted on the opposite shaft to register with and contact the first electro-conductor face. Means are provided to urge the rolls and electro-conductors towards each other, so that contact is made between the electro-conductors when there is no sliver between the tongue and groove of the mating condenser rolls.

Theory of carding. Part I—Influence of air currents on carding; II—Air shearing force separates fibers; III—Control of air in top flat card. Peter M. Strang. *Am. Wool Cotton Reptr., 63,* 12-13, 43 (Aug. 18, 1949); 12-14, 53 (Aug. 25, 1949); 9-14 (Sept. 1, 1949).

Part I. Developments in the top flat card have been confined to the refinement of the operation of existing machines or to the improvement of manufacturing methods for the machine. The functions and operation of top flat cards are reviewed.

In a discussion of air currents effect on the quality of carding, it is revealed that air pressure has no effect on quality of carding and that static does not produce a force which is requisite in carding of fibers. Part II. It is shown that the shearing force of air, caused by rotation of the cylinder, card settings, and the viscosity of the air, tends to move fibers to the surface of the cylinder and that this shearing force is greater than the centrifugal force which tends to throw fibers from the cylinder. It is thought that the dominating factor in the design and operation of carding equipment is the control and manipulation of the boundary layers of air which sheath the rotating cylinders. Details of how temperature changes cause variations in the shearing force of air are also noted. Part III. The conveyance of fibers around the lickerin and their transfer to the cylinder are discussed. The progress of fibers around the cylinder under the flats, to the cover plates and doffer is followed, and air current behavior at doffing is explained. It is believed that wire clothing aids in controlling the boundary of fluid on the cylinder and that greater shearing of air appears possible when sharp wire is used.

Two floor chain conveyor moves full sliver cans. L. J. Williams. *Textile World 99,* 100-1, 214, 216 (Aug. 1949).

A motor driven chain, supported near the ceiling and dropping down to working level at machines, is used to deliver sliver from cards to lap winders on the floor below, from combers to drawing frames on the same floor, and from drawing to roving frames on the floor above at the Pepperell Mfg. Co.'s Opelika, Ala. plant. Cans are held in a specially designed steel rod frame when being moved.

Vacuum stripping and cleaning. Anon. *Textile Industries 113,* 93-5 (Sept. 1949).

The vacuum stripping, cleaning, and waste collection system in the card room (at Brampton Woolen Co.) is described, and the advantages resulting from operation of the system are discussed.

Drafting and roving B 3

Double condenser high draft mechanism for roving and spinning frames. Jan V. Weinberger. USP 2 472 929, June 14, 1949.

A high draft roving mechanism comprises a roving frame equipped with an entry roll unit, a carrying roll unit, and a delivery roll unit through which the slivers are successively passed. Sliver

condensing or reshaping members are provided through which the slivers are passed from the entry roll unit to the carrying roll unit and by means of which the slivers are reformed into slivers of circular cross section. A second series of sliver condensing or reshaping members are provided through which the slivers are passed from the carrying roll unit to the delivery roll unit and by means of which the slivers are transformed into flattened slivers each having its major cross sectional axis lying in a vertical plane.

Method and apparatus for drafting textile fibers. Whitworth F. Bird (Collins & Aikman Corp.). USP 2 471 057, May 24, 1949.

A drafting device for textile fibers comprises a feeding means, means providing a front drawing off nip for fibers being drafted, a flexible support and guide means with a relatively smooth surface and which extends lengthwise of the path of the fibers to be processed as they move to the front drawing off nip. A rotatable and adjustable fine tooth control roller is provided which with the flexible support defines a fiber passage in several adjusted positions, all of which are through the teeth of the control roller. The flexible support is in close proximity to the ends of the teeth at the points of first contact, so that the initial point of penetration of the stock by the fine teeth is opposite a point of support for the fibers.

Roving frame operation. Anon. *Am. Wool Cotton Reptr. 63,* 11, 51 (Aug. 25, 1949).

Control of quality at the roving frame is a matter of prime necessity to stop profit leaks and to serve as a preventative against losses in spinning, weaving, etc. Suggestions are given to help in controlling the quality of roving. These include the checking of roving guide rods, trumpets, roll coverings, rolls for concave wear on surface, etc. The use of seamless, bakelite cans at the creel is preferred; saddles should be oiled regularly; uniform transmission speed of rolls should be maintained; and careful attention should be given to weighting.

Roving frame inspection. Anon. *Am. Wool Cotton Reptr. 63,* 11, 25 (Sept. 15, 1949).

Points to look for in the inspection of the roving frame are discussed and suggestions are given for skewer inspection, checking dimensions of bobbins, overhauling and balancing flyers, and adjusting and checking the presser.

Roving frame maintenance. Anon. *Am. Wool Cotton Reptr. 63,* 13-15 (Sept. 22, 1949).

Periodical inspection of each part of the roving frame is essential in its maintenance. Careful attention should be given to tension, cleaning carriages, cleaning and replacing worn step bearings, providing adequate enclosures for step rail or bolster rail, replacing belt at first sign of wear, checking twin gears, and taking roving weighings at every shift.

Study of roving coil spacing on bobbins. J. F. Bogdan. *Textile Research J. 19*, 575-8 (Sept. 1949).

The factors to be considered in a study of roving coils per inch are: 1) shape of roving cross-section, 2) roving size or weight, 3) degree of compactness or density of the roving, and 4) space between adjacent coils. Based upon a study of these factors and a survey of actual manufacturing practice an equation has been developed ($C = 8.365^{0.6617}$) which makes possible the calculation of roving coils per inch for American carded cottons from a given roving number.

Spinning B 4

Automatic spool sorter. Anon. *Textile Industries 113*, 90-1 (Oct. 1949).

An illustrated description of a mechanical spool sorter for sorting winding tubes and spinning spools (at Alexander Smith & Sons Carpet Co.) is given.

Bobbin holder for spinning and twisting frames. Edw. J. Abbott (to Abbott Machine Co.). USP 2 474 210, June 28, 1949.

A rotatable bobbin holder for spinning and twisting frames comprises a spindle secured at its bottom to a base, a sleeve rotatable around the upper portion of the spindle, the sleeve being adapted for reception of a bobbin placed thereon over the end of the sleeve, and spaced bearings on the spindle acting to position the sleeve with relation to the spindle. A motor is provided for rotating the sleeve around the spindle.

Driving arrangement for spindles of spinning and doubling frames. Werner Naegeli (to Actiengesellschaft Joh. Jacob Rieter & Cie.). USP 2 472 226, June 7, 1949.

A driving device for spindles of spinning and doubling frames comprises a thin sheet metal driving roller extending through the frame and provided with circumferential grooves. Spindles are arranged on both sides of the frame with bands for driving them. The parts of the bands pass from the spindles on one side to those on the other side being situated in the grooves, and tension means for the bands are arranged below the driving roller.

Hydro drive for mules. Anon. *Am. Wool Cotton Reptr. 63*, 11-12 (Oct. 13, 1949).

Features of the hydro-line mule, which has a direct-in-line drive from motor to the mule head with a fluid coupling between the motor and the transmission, are described. These mules are claimed to give evenness of twist and yarn; fewer ends down; constant spindle speed; and smooth, shockless starting and operation.

Install new French system. Anon. *Am. Wool Cotton Reptr. 63*, 12-13 (Sept. 15, 1949).

A brief discussion is given of the Alsacienne drawing and spinning equipment at Lincoln Spinning Mills. Increased production of higher quality yarns is reported for the system.

Spinning mule faller wire control. Lee C. Cain & Orion P. Scott. USP 2 478 235, Aug. 9, 1949.

A faller wire control for spinning mules comprises a bracket including a support-engaging portion and an outstanding horizontal plate, a pair of vertically disposed cylinders containing a volume of fluid and open at their upper ends and each having its lower end rigidly secured to and closed by the plate, removable caps for the upper ends of the cylinders, and a conduit having ends mounted through the plate and communicating with lower ends of the cylinders. A valve is interdisposed in the conduit and controls the flow of liquid between the lower ends of the cylinders, and an unobstructed pipe extends between and communicates with the upper ends of the cylinders adjacent the upper ends of it. A piston rod is slidable through the cap of one cylinder and carries a piston at its lower end located within the cylinder and operating between the pipe and lower end of the cylinder. A collar is provided about the rod, and a compression spring about the piston rod engages the collar and the cap and urges the piston rod and piston upwardly to a normal position.

Textile machine construction. Meinard F. Thoma. Can. P. 448 831, June 1, 1948.

A textile machine construction comprising a series of spindles for supporting packages of filamentary materials such as roving, a second series of spindles, means for driving the second series of spindles for the formation of yarn packages thereon, means for causing the performance of a textile operation on the material, and shielding members

presenting a series of unbroken planes completely enclosing all parts of the machine except for the spindles, the packages of material thereon and the means for performing the textile operation.

Textile mill spindle. Herbert Gleitz & Chas. E. Miller (to Marquette Metal Products Co.). Can. P. 448 147, April 27, 1948.

In a blade construction for a textile mill spindle, a pair of unidirectionally tapered solid steel blade sections joined together in axial alignment for permanent operation as a single piece blade, with the respective tapers extending in opposite directions.

Winding and spooling B 5

C. G. E. yarn tensiometer. Anon. *Can. Textile J. 66,* 46 (Aug. 19, 1949).

A new device is described which measures yarn tension by means of strain gauges, automatically records the measurement, and provides an accurate check on the yarn tension as it is wound on bobbins.

Constant speed winding of textile yarns. H. W. Ball. *Rayon & Syn. Tex. 30,* 42-3 (July, 1949); 53-5 (Aug. 1949); *Textile Bull. 75,* 47-8, 50, 51 (June, 1949).

The 2 basic winding systems, surface driven and spindle driven units, and the 2 basic constant speed problems, winding from a free supply and taking up the yarn from a constant speed source, are the main points discussed. The advantages of electronic or mechanical controls for speed are considered.

Crepe throwing from viscose cakes. Robt. P. Morningstar. *Rayon & Syn. Tex. 30,* 53-5 (Oct. 1949).

The problem of yarn sloughing off the quill is considered. Methods and materials used for crepe soaking are discussed, and a method of atomizing through the chamber of the H. & W. Steamer is described and illustrated.

Development of uptwisters for filamentous synthetic yarns. R. A. Hargreaves. *Rayon & Syn. Tex. 30,* 65-7 (Oct. 1949).

This is a review article discussing the models F and F-2, head end, take-up roll, traverse mechanism and the cylinder drive.

Double-twist twisting device. John K. Cochran & Jacob Pfister (to Duplan Corp.). USP 2 482 654, Sept. 20, 1949.

This invention provides a double-twist device in which the normally stationary package holder has a member which is swung centrifugally into the yarn path when the holder rotates.

Modern pirn winding machinery. Muschamp weft master high speed pirn winder. Anon. *Indian Textile J. 59,* 895-8 (July, 1949).

Three pirn winders, a non-automatic, an automatic, and a cop winder are discussed. The non-automatic machine has 20 completely independent spindle units per machine instead of a bank of 20 spindles controlled by one gear box as in the older units. The automatic winder is of the spindleless type and is built on the unit principle. A unit comprises 4 winding heads to accommodate 4 pirns which are run and fed simultaneously. This machine can wind any type of yarn in a wide range of counts and any type of cylindrical or flat (Ruti) type of package. The cop-winder is of the "spindleless package" or "super cop" type but has a specially shaped spindle which has been so designed that the cop can be forced evenly and smoothly toward the pressure cone.

Quality winding techniques. Carl H. Inderfurth. *Am. Wool Cotton Reptr. 63,* 13-15 (Oct. 6, 1949).

The use of the precision winder and filling winder for processing continuous filament yarns and the drum winder for processing natural and spun rayons is discussed. Various tension devices as they apply to these machines are also reviewed.

Revolving reel for throwster or other reeling device. Albert Nau-Touron (to S.A.R.L. Fonderie De Precision). Can. P. 448 892, June 1, 1948.

In a textile reeling machine, a revolving reel rotatably mounted on the spindle of the machine, and comprising a body, means for rotatably mounting the body on the spindle of the machine, rods secured by any known means to the side of the body and parallel to the axis of the reel, a traveler freely mounted on each of the rods, and means for passing the thread through the traveler.

Yarn tensioning device. C. B. Kingsbury (to North Amer. Rayon Corp.). USP 2 478 926, Aug. 8, 1949.

A multiple-twist twister having a tension disc resting on the spindle with a stem extending loosely into its aperture and being magnetically drawn to the top of a conical cap resting on the yarn support.

Yarn processing B 6

Cord stretching apparatus. Ray C. Young & John

J. Brown (to U. S. of Am.). USP 2 474 927, July 5, 1949.

The invention comprehends a textile strand stretching apparatus comprising a forward roll and a rearward roll about each of which the strand is wrapped, speed-varying means to cause the peripheral speed of the rearward roll to lag behind that of the forward roll, means for applying a constant force to that portion of the strand extending between the rolls to apply tension thereto, an element that moves in response to variations in the amount of stretch of that portion, and actuating means responsive to the movement of the element to cause the speed-varying means to increase the lag when the stretch increases and to decrease the lag when the stretch decreases.

Method of and apparatus for treating yarn or cord. Albert W. Hansen & Albin N. Benson (to Dominion Rubber Co. Ltd.). Can. P. 448 131, April 27, 1948.

An apparatus for treating yarn to increase its tensile strength comprises in combination, a source of yarn supply, a power driven pull roll for pulling the yarn forward from the source of supply, means for wetting the yarn with water containing a wetting agent, free-running stretching rolls adapted to operate by the advancing pull upon the yarn to partially stretch the wet yarn, means for saturating the partially stretched yarn with hot water, a second pull roll operated at a higher surface speed than the first roll to stretch the hot wet yarn close to the breaking point, a heated drier and a third pull roll for advancing the yarn past the drier and operable to keep the yarn stretched as it dries.

Thread guide. Joseph Amon. Can. P. 448 801, June 1, 1948.

A thread guide comprising a body portion having its outer periphery formed with a straight frustoconical portion having a tapered surface extending from end to end, the body portion having a guide opening centrally therethrough and having an external circumferential groove adjacent one end thereof whose side wall nearer the smaller end of the tapered portion intersects the tapered surface at an acutely angular edge.

Special yarns B 7

Spun yarn. Paul H. Cannon (to Camille Dreyfus). Can. P. 448 922, June 1, 1948.

This invention provides a blended yarn having improved dyeing properties which comprises at least 2 yarns each having alternating portions with the dye defect, known as shoulder effect, and the normal dyeing effect at recurring intervals, the yarns being in side-by-side relation with the portions having the shoulder effect of one yarn alongside a portion of the other yarn having normal dyeing effect.

Yarn products B 8

Synthetic fibers and industrial thread. Curtis E. Browne. *Rayon & Syn. Tex. 30,* 107-8 (Sept. 1949).

Synthetic fibers are discussed with reference to their applicability to use in threads.

Textile product. W. Whitehead (to Camille Dreyfus). Can. P. 448 217, April 27, 1948.

A process for the production of a compact bonded yarn comprises associating strong yarns of stretched, saponified organic esters of cellulose with thermoplastic yarns having a basis of cellulose acetate to form a composite yarn, and then subjecting the composite yarn to the action of vapors of a softening agent for the thermoplastic material.

Yarn applications B 9

Method of making reinforced plastic products. Donald Finlayson & Harry Crawshaw (to Celanese Corp. of Am.). USP 2 482 164, Sept. 20, 1949.

This invention provides a method of making sheets and other articles of plastic material, in which a plastic which is substantially free from rubber-like elasticity is reinforced with textile yarns of the same order of elasticity as the plastic. The method comprises incorporating in a body of the plastic a fabric comprising the reinforcing yarns together with auxiliary yarns, and then forming the plastic into the shape of the article, the temperature conditions of the forming operation causing the auxiliary yarns to lose their strength, the fabric comprising both reinforcing and auxiliary yarns in both warp and weft, the reinforcing yarns not being interlaced with one another but depending for their retention in the fabric structure upon the auxiliary yarns.

Yarn testing and numbering B 10

Nylon pirn tension test reveals wide variance in drag. J. A. Stein & D. L. Judson. *Textile World 99,* 114-5 (Aug. 1949).

Tests on 40 den. hosiery yarn show that as the pirn decreases in diameter the tension decreases and variation in tension becomes less. Tension and variation are both greater as the yarn leaves the bottom of the pirn than at any other point. Tables of results of tests are given.

Use operating tests to improve yarn quality. E. H. Helliwell. *Textile World 99,* 102-3 (Aug. 1949).

Operating tests should follow through all processes. Excessive ends down at one process are often an indication of something wrong in a previous process. Ends down should be classified, and the number of unclassified ends down reduced as much as possible. Ends down are the greatest variable affecting the amount of work in some operations. Specimen forms are shown.

Yarn variation shown by square-root index. Edward H. Jackson, Jr. *Textile World 99,* 106-7 (Aug. 1949).

The spinner must state by a single number the size of the yarn; by another single number the size of the variation of the yarn. The square-root average or the geometric mean of the range should be used for the former; the square-root index or index of the range should be used for the latter. The derivations of these 2 measures are described and examples of the practical use of each is given.

FABRIC PRODUCTION C

Yarn preparation C 1

COTTON SLASHING. Paul V. Seydel. Atlanta, Ga., W. R. C. Smith Pub. Co., 1949. 270 p. $3.50 (in paper cover $2.00).

This little volume on cotton warp sizing is a reprint of a series of articles which appeared in the magazine "Textile Industries." In nine chapters the author, Dr. Paul V. Seydel, director of research of Seydel-Wooley & Co. of Atlanta, Ga., covers the material to be sized—cotton: the materials used for slashing; analysis and testing materials for sizing; the sizing process; a well sized warp; the slasher room and its equipment; slasher controls and recent developments in cotton slashing. The appendices are exceptionally large and cover many tables and forms. The bibliography of the literature on warp sizing is exceptionally good and nearly complete. It lists books, analysis, apparatus, cotton and its properties, desizing, rayon slashing and miscellaneous information. To anyone to whom cotton warp sizing is still a problem and a puzzling subject, the book will indeed be very helpful, because it clears

up a lot of old-fashioned ideas. The same principles and substances can be used on spun rayon warps, according to the author.—*Rayon & Syn. Tex.*

Electronic size cooking control system. E. P. LaVoie. *Can. Textile J. 66,* 54-6 (Sept. 1949).

An electronic size cooking control system is described which resulted in a 25% reduction of the size formula achieved by close control of cooking and storage temperatures, and accurate timing of the cooking and storage temperatures, and accurate timing of the cooking period. Other advantages of the system are: 1) increased uniformity of size solution from batch to batch; 2) better utilization of the time of skilled operators; 3) increased production; and 4) elimination of "boil over" when approaching cooking temperature.

Latest British warping and beaming machine. Anon. *Brit. Rayon & Silk J. 26,* 48-9 (Aug. 1949).

Swindell Engineering Company's prototype model has completed 6 months of mill tests. This new machine has a 2½ meter circumference drum with a continuous surface, a capacity of 2,750 yards, and a potential speed of 600 yds. per min. The whole machine is mounted on wheels and can be moved from creel to creel.

Miniature slasher developed at N. C. State. W. E. Shinn & C. B. Sink. *Textile World 99,* 122-3, 210 (Aug. 1949).

A small slasher suitable for pilot plants or other experimental work has been built. It duplicates actual slashing, except drying which is done by an electric element in an oven. The slasher handles up to 196 ends from a pin-type creel; delivery is to a 7″ wide beam or spool. Pictures and drawings are included.

New acetate size improves slashing and weaving performance. Anon. *Rayon & Syn. Tex. 30,* 44-5 (July, 1949).

Stymer S is a new styrene-base resin, developed by Monsanto, which provides the acetate yarn with a tough film. The size possesses flexibility, adhesiveness, abrasion resistance without undue stiffening and is water-soluble. It increases weaving efficiencies, reduces static electricity and cuts desizing time. The range of acetate yarns successfully sized and actual mill data concerning sizing, slashing and weaving are given.

New high speed warping creel. Anon. *Brit. Rayon & Silk J. 26,* 46-7 (Aug. 1949).

A new line of speed creels for rayon, silk, and synthetic yarns is being produced by Henry Livesey, Lt., Blackburn, England. Features include: simplified construction; adaptability for cones, cheeses, bottle bobbins, or other forms for overend withdrawal; and single end breakage detectors and electric stop motion. The creels are jack type, and can be built to handle up to 1,000 packages. Distance between tension frame and supply package is adjustable. A light indicates the bank that breakage occurs on and the device has a motion that prevents slack ends caused by stopping from lighting other banks.

Slashing and weaving explored by Alabama men. Anon. *Textile World 99,* 118-9, 147 (Aug. 1949).

The Alabama Textile Operating Executives discussed the following in their spring meeting: 1) the savings in using a synthetic back squeeze roll cover on slashers; 2) gas-fired, hot-air dryers, which can be run as fast as the creel will stand; 3) viscosity meters to check the viscosity of size; 4) endless loom check straps, which result in less check strap cost because of longer wear; 5) the advantages of quilled filling over filling spun direct on quills for coarse yarn numbers; 6) the trouble some mills are having with crankshaft and friction gear breakage on X-model looms.

"Tyze" resin textile size for slasher sizing nylon. Henry O. Belleville. *Rayon & Syn. Tex. 30,* 68-9 (Aug. 1949).

The properties and uses of an improved resin textile sizing material for nylon are noted.

Uxbridge gentle air slasher. Anon. *Textile Industries 113,* 101-4 (Sept. 1949).

In a description of the Uxbridge gentle air slasher the following subjects are discussed: wet-split warp, speeds, stretch control, advantages and disadvantages, operating costs, safety features, and maintenance and lubrication. Information for the article was obtained from a slasher installed at Riegel Textile Corp.

Weaving C 2

Designing goods with a raised finish. W. Wiechmann. *Melliand Textilber. 30,* 55-7 (Feb. 1949); *in German.*

This gives a general description of the possibilities of designing goods with a raised finish, such as blankets, travelling rugs and caps, by weft changing. Numerous weaves are illustrated showing how to produce designs by weft sequence and weave effects.

Faulty picking motion can cause bad doffs. Eugene P. Schremp. *Textile World 99,* 141, 218, 220 (Aug. 1949).

Full bobbins in the bobbin can and banging off are signs the weaver and loom fixer should not neglect. Faulty picking causes more trouble than is realized on automatic looms. Shuttles and bobbins should be of the proper size, and the position of the shuttle at the time of transfer is important. Some of the causes and cures of the above are given.

Friction letoff. Francis G. Lake & James W. Trimmer (to M. W. Kellogg Co.). USP 2 478 283, Aug. 9, 1949.

A loom let-off comprises means for multiplying the rotative movement of a warp beam, and means for continuously restraining the rotative movement to maintain a predetermined tension on the warp. The restraining means includes juxtaposed relatively rotatable elements having surfaces in slide engagement and means for lubricating the surfaces. The multiplying means has its input end connected to the warp beam and its output end connected to one of the relatively rotatable elements.

HANDBOOK OF WEAVING AND MANUFACTURING. Henry Greenwood. 2nd ed. London, Pitman & Sons, Ltd. 1948. 168 p. $3.00.

This little book on weaving and manufacturing is a small treatise for students, weavers, overlookers (foremen), managers and others engaged in the Textile Industry. Details of machine parts have been omitted to keep it from becoming involved in highly technical details. It is the *second* edition of this work by the eminent head of the textile department of the Municipal Technical College of Bury. The author is a medalist of the city and Guilds of London Institute in cotton and linen weaving. It covers textile fibers; tests for fibers; yarn types and uses; identification of fibers; yarn testing machines; raw cotton faults; yarn faults, cotton yarn wrapping tables; yarn numbering and conversion; healds, reeds, and their calculations; folded yarns; warp and weft calculations; weights; moisture regains and calculation; weaving rates and costing; waste allowances; percentage contraction etc. This booklet is . . . extremely brief but covers a wide variety of subjects. It is too simple for the experienced technician but extremely helpful to the learner, apprentice and student.—*Rayon & Syn. Tex.*

Harness holders for warp mounting. H. E. Wenrich. *Rayon & Syn. Tex. 30,* 42-4 (Aug. 1949).

Many advantages are to be gained by the use of a harness holder in warp mounting. In addition to being helpful to warp hangers, the holder can be used by fixers to gain time in making certain loom repairs and is actually a cost-saving factor to production.

High count satin crepe. Anon. *Am. Wool Cotton Reptr. 63,* 11-2, 15 (Oct. 6, 1949).

Satin woven crepes have a high count in the warp direction, a smooth, lustrous face, hard-twisted filling yarn with both "S" and "Z" twists, and a high fabric construction. The weakness of the fine warp yarns used, the friction in weaving due to the high number of ends per inch, the variation in tension on the yarns in the warp, etc. are some of the problems in producing these fabrics that are discussed. A high count satin crepe which has an acetate warp and viscose filling is analyzed.

Loom. Eneas G. Mascarenhas. USP 2 477 996, Aug. 2, 1949.

A loom control system includes an electric circuit operating the loom, a cop changing mechanism, a fluid motor operating the cop changing mechanism with an electromagnet actuating the fluid motor. A normally open electric circuit controls the electromagnet, and a circuit breaking means controlled by the cop mechanism opens the loom circuit to stop the loom when the cop changing operation begins. A cop feeler is provided for controlling a circuit closing means which closes the circuit controlling the electromagnet to start the cop changing operation when contact is made with an exhausted cop.

Loom binder. Albert E. Chouinard (to Graton & Knight Co.). USP 2 475 943, July 12, 1949.

A binder strap for use as a facing for the movable member of a shuttle box binder comprises an elongated strap composed of 2 sections having their adjacent ends united together to present a smooth surface adapted for contact with the shuttle, one section comprising a hard impact resisting leather and the remaining section comprising a softer leather capable of exerting high frictional resistance to the passage of the shuttle thereover.

Loom harness. John J. Kaufmann (to Steel Heddle Mfg. Co.). USP 2 478 157, April 2, 1949.

Heddles for loom harness comprise thin flat strips of metal each having side portions cut away for the greater portions of their length, but being

of the full width of the strips at the top and bottom portions. The top and bottom portions of the strips each have a slot for mounting the heddles on supporting rods, and the metal on one side of each of the slots lies in the main plane of the heddle and has an opening sufficient to permit the heddles to pass means for supporting the heddle rods intermediate their ends. The metal on the opposite sides is bent in bowed formation out of the main plane of the heddle so as to provide longitudinal resiliency at each end of the heddle to relieve undue stress.

New Orlon fabric appears. Anon. *Am. Wool Cotton Reptr. 63,* 42 (Sept. 22, 1949).

Features of a new fabric made from Orlon, an acrylic fiber, are discussed and compared with other materials, such as cotton, linen, rayon, etc. Cost and weaving data on the new fabric are given.

Picker stick snubber. Francis G. Lake & Jas. W. Trimmer (to The M. W. Kellogg Co.). USP 2 464 518, Mar. 15, 1949.

A picker stick snubber comprises a substantially upright snubber leaf spring secured at its lower end near the base of the loom to a structure which oscillates with the rocker shaft supporting the lay oscillating sword, and which is desirably part of the frame structure of the parellel motion mechanism of the picker stick, and adapted to be pressed near its upper free end by the picker stick during its overthrow movement to flex the spring. The checking impact of the picker stick during its overthrow movement is thereby transmitted directly to the base portion of the loom where the loom is most rigid and stable, thereby reducing shock vibrations in the loom resulting from the checking action to a minimum. Since the snubber spring is not mounted on the lay as in conventional structures, no checking impact is transmitted directly to the lay. The snubber is centered sideways with respect to the picker stick, and carries a shock absorbing wear pad adapted to be engaged by the stick during its overthrow, and having very little slide movement along the stick during checking or snubbing action, thereby reducing abrasive action on the pad to a minimum. The snubber leaf spring is in the general shape of an inverted U, mounted at its lower end and free at its upper end for stick impact action. This structure serves to distribute symmetrically and effectively the impact forces created so that minimum of vibration is set up, and also serves to provide a rugged, durable structure which can be easily mounted, and easily replaced if desired.

PRACTICAL WARP GAITING. W. Middlebrook. Manchester, England, Emmott & Co. Ltd., 1949. 107 p. Price: 3s. 6d.

This volume provides comprehensive data on the principles of warp-gaiting, explaining how and, equally important, why various methods are adopted. A good deal of information is contained in the volume which should be of much value to anyone learning loom tackling. . . .—*Can. Textile J.*

Rayon cord suiting. Anon. *Am. Wool Cotton Reptr. 63*, 15, 36-7 (Sept. 1, 1949).

Advantages in the production of rayon cord suiting are: a wide variety of effects from a single gray cloth construction, a corded effect, regularity with few or no projecting fibers and few defects, smoothness, stiffness without too much fabric weight, and low production costs. In general, these cord effects consist of colored yarn in the warp direction with white cords and white filling yarn. Details of the production of rayon cords are discussed; a rayon cord suiting, composed of viscose warp yarn and acetate filling and cords, is analyzed.

Ruti-weft mixing motion. W. Middlebrook. *Textile Mfr. 76*, 164-5 (Apr. 1949).

The simplest form of drop box is the two-box motion, and special features of the Ruti motion are described; the escapement device for the picker stick is also described.

Servicing the S-6 magazine side shuttle box. H. E. Wenrich. *Rayon & Syn. Tex. 30*, 81-3 (Sept. 1949).

Pointers for servicing are given, including covering front box, drag-ins, aligning boxes, box tops and new box tops and fronts.

Uncommon effects in common weaves. D. C. Snowden. *Textile Recorder 67*, 139-41 (Sept. 1949).

Attractive color-and-weave effects may be obtained by arranging warp and/or weft orders of coloring which repeat on a number of ends or picks that is neither the same as nor a factor or multiple of the number of ends or picks on which the weave interlacing repeats.

Warp-beam-driven letoff for textile looms. Charlton H. Williams (to Swift Mfg. Co.). USP 2 479 285, Aug. 16, 1949.

In a loom having a side frame with a warp beam in the side frame, a friction let-off comprises a shaft mounted through the side frame, a pinion affixed to the inner portion of the shaft and in

mesh with the warp beam head gear, a stop member affixed to the outer portion of the shaft, a friction drum comprising a drum periphery, a web carrying the periphery and an elongated hub centrally of the web and carrying it and mounted for free rotation on the outer portion of the shaft with the inner end of the hub abutting the stop. The drum periphery extends outwardly from the web to provide a recess totally within the perimeter of the drum periphery and enclosed only at its inner side by the web. The outer side of the recess is completely open across the diameter of the drum periphery and the open side is exposed outwardly free from the frame. A ratchet wheel having a hub is adapted to be slid over the outer free end of the shaft and into the recess with means to affix the ratchet wheel hub to the shaft for rotation with it. Pawls are pivotally carried by the drum outwardly beyond the ratchet wheel, and spring means urge the pawls into engagement with the ratchet wheel. Friction means engage the outside surface of the drum periphery, and means adjust the tension of the friction means about the drum.

Weaving nylons with or without temples. H. E. Wenrich. *Rayon & Syn. Tex. 30*, 67-8 (July, 1949).

Factors to be considered in using temples in the weaving of nylon are discussed. On lower count weaves with suitable porosity for shirtings and other like constructions, it is not necessary to use temples. Suggestions for temple storage are also given.

Yarn clamp for warp beams. K. Kadish. USP 2 478 763, Aug. 9, 1949.

In a beam having a core with a longitudinal channel, a warp yarn clamp comprises a member of U-shaped cross-section seated in the channel, a clamping member mounted adjacent one end between the legs of the first member to swing about an axis transverse to the first member and movable into and out of the first member. Means on one of the members engage the other to hold the clamping member within the first member, and means mounted adjacent the free end of the clamping member swing the end upwardly.

"Zang" four-box motion. W. Middlebrook. *Textile Mfr. 75*, 375-6 (Aug. 1949).

The many admirable features of the German Zang box motion are offset to some extent by the fact that it is not possible to bring any required box into position without "turning" the loom.

Knitting C 3

Bright future for warp knit fabrics. Anon. *Am. Wool Cotton Reptr. 63,* 15-16 (Aug. 25, 1949).

Rates of production of warp-knitted and weft-knitted fabrics are compared. A discussion is given of warp beams in warp knitting, warp-knitted non-elastic fabrics, warp-knitted lace, etc.

Circular knit hosiery. Harry N. Sheppard (to Scott & Williams, Inc.). Can. P. 448 471, May 11, 1948.

In a circular knit stocking, a heel in which there is present a plurality of tapered gussets arranged one below the other, each contiguous to the instep fabric, one of the gussets containing more wales in a plurality of courses than the longest course of a tapered gusset above it, whereby there is continuity of plain fabric from the instep of the stocking into the lower gusset, in combination with a plurality of strengthening partial courses in the heel lying entirely between the last circular knit course of the leg and the rest of the heel, one such course being interknit to the inner ends of all the tapered gussets in the heel.

Device alters heel construction. Anon. *Textile Industries 113,* 231 (Oct. 1949).

Details are given of an attachment for 45-gauge Reading knitting machines equipped with rack-back mechanism. The attachment is used in simulating the appearance and fit of the "Duo-Flex" type heel made on fine gauge machines.

Fashioned circular knit stockings. H. Wignall. *Textile Mfr. 75,* 322-3 (July, 1949).

The fully-fashioned stocking is superior in appearance to the seamless type since it is shaped by altering the number of needles knitting, while the circular knit stocking has the same number of wales throughout. As the stocking must be able to stretch to nearly 7 in. double width at the top compared with 3½ in. at the ankle, it is obviously impossible to achieve regularity of knitting throughout by the seamless method. Seven methods which have been used from time to time to combine the productivity of the seamless method with the superior fit and appearance of the fully-fashioned method are described. Methods which appear promising for the future are: 1) semi-fashioning or tailoring, 2) floating threads across back of foot, and 3) making leg blank by oscillatory motion. A method which has been used successfully in Canada to make circular fashioned hose is "flat bar tubular knitting." This method is sound and overcomes the normal "fit" problems of the seamless hose but production is slow and the machinery used is expensive and complex.

Helper needle. Chas. E. Fuller. USP 2 463 258, Mar. 1, 1949.

This invention provides means for assuring the formation of perfect stitches by pressing downwardly and rearwardly upon the loops of the thread before and during the time the knitting needle rises sufficiently to clear the fabric line, the loops being thus drawn taut and the loops which are to pass from the needle being forced downwardly and rearwardly behind the needle. Immediately thereafter the helper needle springs upward to clear the fabric and await its next operating cycle.

Knit fabric. Albert E. & Frank R. Page (to Scott & Williams, Inc.). Can. P. 448 895, June 1, 1948.

A weft knit welt fabric, the first few courses including in at least one course, at least one welt loop at a recurring wale spaced apart at least 2 wales, there being one or more following courses having loops at all of the wales, the welt loops being interknitted with a following course of the stocking to form a welt.

Knitting machine. Oscar Fregeolle (to Hemphill Co.). USP 2 464 126, Mar. 8, 1949

Generally, in circular knitting machines having co-axial superimposed needle cylinders, the needles are actuated by sliders positioned in the needle slots of both cylinders and provided with butts which cooperate with the knitting cams to cause the needles to draw stitches and with other butts actuated by other cams to effect the transfer of needles from one cylinder to the other. In the machine of this invention, the sliders control the knitting motions of the needles. The transfer of the needles from one cylinder to the other is effected, not by the sliders, but by jacks positioned below and above the sliders in the lower and upper cylinders, respectively, and actuated by jack cams whenever needle transfer is required. The nature and number of the butts on the sliders and jacks depends upon the requirements of the knitting, the method employed and the particular cam arrangements selected. The machine of this invention is capable of knitting true rib fabric of any desired kind in any desired part or parts of the stocking and to automatically change to plain fabric and back to rib again at any desired point. Also it may be adapted without difficulty as a links-and-links machine.

Knitting of nylon staple sweaters. R. D. Bennett. *Can. Tex. J. 66,* 50 (Sept. 16, 1949).

Suggestions given to manufacturers of nylon sweaters to improve the quality of their production include: 1) skein dyeing instead of package dyeing to improve loft; if piece dyeing is used the sweaters should be pre-thermoset on forms; 2) back-wind yarn to relax tensions, since hard cones will result in a loss in loft; 3) knit with minimum tension, adjust cams accurately and reset if necessary when looseness or tightness of the stitch occurs due to humidity changes; 4) do not use wind up rollers under machine; 5) for seaming use one end of sweater yarn and two of nylon seaming thread; 6) do not brush sweater as this will encourage pilling; 7) wash and tumbler dry to enhance hand and loft.

Knitting machine. Herman E. & Cecil Crawford. USP 2 473 677, June 21, 1949.

A circular knitting machine is claimed having means for knitting a very loose stitch fabric and laying into the fabric an elastic strand by placing the strand in front of some needles and behind other needles and advancing the sinkers at the knitting point. One or more top yarns will thus be knitted while on top of the advanced sinkers, providing very elongated loops, while the elastic yarn is incorporated in the fabric. A pattern control means is also provided for selecting the needles which will take the elastic yarn so that a design can be formed on the fabric merely by the manner in which the elastic yarn is incorporated into the fabric. The machine also embodies means for engaging the fabric and pressing it downwardly on the sinkers so as to cause a proper shedding of the loops.

Knitting machine. George Wilders & John E. Lynan (to William Cotton Ltd.). Can. P. 447 686, April 6, 1948.

In a knitting machine having a member movable to and fro, an hydraulic coupling for connecting the aforesaid member to driving means comprises an hydraulic chamber and a piston-member relatively movable to and fro in the chamber, of which 2 parts one is connected to the aforesaid member the other to the driving means. A by-pass is provided for establishing connection between opposite ends of the chamber so that hydraulic fluid may flow from one side of the piston-member to the other, and a valve for opening and closing the by-pass, and valve operating means for opening the valve at or before the end of the traverse of the aforesaid member in either direction and for closing it at or after the commencement of the traverse in the reverse direction.

Knitting machine. Geo. O. Young (to Vanity Fair Mills, Inc.). Can. P. 448 778, May 25, 1948.

In a flat knitting machine wherein are employed knitting needles and tongues, needle operating means which includes reciprocating plungers and guides therefor, sinkers and sinker-bar supports, the improvement which comprises a single supporting pipe and means for mounting the guides and sinker-bar supports on the supporting pipe.

Knitting machine. Thomas S. Hayhurst (to Max Nydegger). Can. P. 448 919, June 1, 1948.

This invention provides a knitting machine mechanism for moving the needle jacks inwardly to position the needles to receive thread and for moving the needle jacks and the needles outwardly to form loops in normal knitting, characterized by the fact that the needle jacks are advanced inwardly to position the needles for receiving thread independently of any movement of devices by which the needle jacks are moved outwardly to form loops.

Knitting machine. Thomas S. Hayhurst (to Max Nydegger). Can. P. 448 920, June 1, 1948.

In needle jack selecting and positioning mechanism for knitting machines, the combination of a plurality of push jacks, a plurality of connecting jacks each arranged to engage a portion of one of the push jacks, means for moving the connecting jacks in one direction to effect angular adjustment of the push jacks, the means including a portion arranged and adapted to move some of the connecting jacks in the direction differentially in relation to other of the connecting jacks, and means for moving the connecting jacks in the opposite direction.

Knitting machine. Thomas S. Hayhurst (to Max Nydegger). Can. P. 448 921, June 1, 1948.

This invention provides a widening and narrowing control mechanism for knitting machines wherein a jack operating cam is moved in one direction to idle the needles and in the opposite direction to activate the needles, and devices for conditioning certain needles to receive loops in decking are moved simultaneously and to like extent with the cam, characterized in that the means for effecting the movements are operatively connected with and produce corresponding adjustments of devices employed in decking, in thread change, in racking, and in changing the lead between the stitch cams and the thread and brush carriers.

Knitting machine and method. Roy C. Amidon (to

Vanity Fair Mills, Inc.). Can. P. 448 779, May 25, 1948.

The method of knitting on a knitting machine which employs hook needles, thread guides, sinkers, hook-closing tongues, the method including moving the needles together with the tongues upwardly through the sinkers and forwardly between the thread guides to engage the threads with the shanks of the needles on the side of the needles opposite the hooks, then, after the needles have passed the thread guides, racking the thread guides, then passing the needles and tongues back between the thread guides and downwardly to hook the threads and carry them into the sinkers, moving the tongues to close the hooks as the hooks enter the sinkers and holding the hooks closed until the threads have been drawn through the previously formed loops on the needles and the loops have been knocked over, again racking the thread guides, thus completing a cycle of operation.

Link-and-link machine. Chas. F. Miller (to Jacquard Knitting Machine Co., Inc.). USP 2 465 465, Mar. 29, 1949.

A links-and-links circular knitting machine is claimed which has 2 needle beds having a fabric space between them and a plurality of needles transferable from one bed to the other. Needle jacks are provided in one of the beds and cams to move the needle jacks to needle-transferring positions. The needle jacks, provided in the other bed, are recessed at the backs of their tail portion to permit rocking of those jacks to release the needles. Cams, relative to the latter jacks, are transversely movable to engage the tail portions of the latter jacks such as are moved to needle-transferring position.

Looping and seaming machines. I. S. H. Boyer. *Textile Industries 113*, 135-6, 139, 141, 143 (Sept. 1949).

The operation and maintenance of the Sotco steady dial looper are discussed with details given for checking the needle setting, setting the dial to the needle, setting and adjusting the looper hook assembly, the relation of the looper hook to the stitch finger, setting the stitch finger, replacing the needle, adjusting the brush, replacing points, and necessary equipment for the upkeep of the Sotco looper.

Modern equipment and processing review. Anon. *Textile Industries 113*, 209, 211, 213-14, 217, 219, 221, 224, 227, 229 (Oct. 1949).

Information pertaining to knitting equipment and

supplies, made available to the textile industry since November 1948, is presented.

Mono- vs. multi-filament nylon hosiery. Victor A. Schiffer. *Rayon & Syn. Tex. 30*, 109-10 (Sept. 1949).

The relative merits of mono- and multi-filament nylon for hosiery are discussed. Each type has certain merits lacking in the other; in the long run, consumer demand will dictate how much of any type nylon hosiery will be made.

Quality and shape in seamless hose. H. Wignall. *Textile Mfr. 75*, 373-4 (Aug. 1949).

Since there can be no variation in the cylinder diameter or in the number of needles knitting in a standard seamless machine, the shape of the stocking must be produced by alteration of the stitch length. The normal method of controlling stitch length is by vertically displacing the needle cylinder or by altering the height of the cam block in relation to the needle cylinder. Other factors which affect the "slackness" or "stiffness" of the stitch and which must be controlled in order to produce quality hosiery are: 1) tension on the knitting thread, 2) sinker timing, 3) upthrow cam timing, 4) ambient humidity, and 5) regularity of yarn count.

Simplex warp knitter. Anon. *Am. Wool Cotton Reptr. 63*, 17, 19 (Aug. 25, 1949).

The Simplex warp knitter has 2 sets of needles, usually 2 sets of warp beams for feeding yarn to the needles, and 2 guide bars. The machine can produce double fabric laced together simultaneously as well as ribbed goods. The mechanical features of the Reiner Simplex machine are discussed.

Standard sizes for women's garments. M. L. Staples. *Can. Textile J. 66*, 42-46 (Sept. 16, 1949).

A system of sizing developed for 5 types of women's undergarments, nightgowns, slips, vests, panties and bloomers is described. For each type of garment, a selection was made of the basic measurements required to define the particular part of the body to be fitted. In order to translate the basic body measurements into dimensions of finished garments, theoretical models were set up to represent each size group of the population. According to the proposed system 24 sizes of slips will cover 63% of the potential volume of consumers. For vests, 10 size groups will include 81% of the population, and for

panties and bloomers 12 sizes will be adequate for 83% of the population.

Thread guide racking mechanism. Roy C. Amidon (to Vanity Fair Mills, Inc.). Can. P. 448 780, May 25, 1948.

In a knitting machine employing a reciprocatable thread guide carrier bar, the improvement which includes a racking lever, a push-pull connection between the lever and the carrier bar, the connection including a push bar and a pull bar and means for taking up lost motion between the bars and the lever and the carrier bar, and positively acting means to rock the lever in 2 directions to rack the thread guide.

You can overuse nylon in wool blends. Harry Wignall. *Textile World 99,* 135, 222, 224 (Aug. 1949).

The most practical amount of staple nylon to use in wool socks seems to be 5 to 8%. Socks of coarser wools wear better and shrink less than those of fine quality wools. Ply twist equal to singles twist produces best shrink resistance. These results of recent tests are shown by a series of charts and are also described.

Special fabrics C 4

Composite fibrous product. Carleton S. Francis, Jr. (to Sylvania Industrial Corp., to Am. Viscose Corp.). Can. P. 448 905, June 1, 1948.

A laminated product comprising at least one layer of textile fabric, at least 2 layers of felt like material formed from at least 2 types of fibers one of which is potentially adhesive and has an inherent tackiness upon heating, and a layer of binding material comprising potentially adhesive fibers and disposed between the layer of fabric and each felt-like layer, the layers being assembled so that one surface of 2 of the felt-like layers is exposed and the other surface is substantially permanently anchored to one surface of a fabric layer, the fibers in the product and the various layers constituting the same exhibiting a strong and substantially permanent adhesion due to the thermal tackiness after heating of the potentially adhesive fibers wherever they occur in the composite product.

Composite textile strand and fabric. Archibald H. Davis. USP 2 475 083, July 5, 1949.

A textile fabric comprises a number of composite strands, each including at least one organic plastic fiber and at least 2 siliceous fibers interlaced with the organic plastic fiber to expose successive

spaced portions of the organic plastic fiber in the surface of the strands, and a coating composition bonded to the strands by adhesive contact with the exposed portions of the organic plastic fiber.

Electrically conductive fabric. Wm. Watson (to Bates Mfg. Co.). USP 2 473 183, June 14, 1949.

A method of making an electrically conductive fabric comprises applying to a fabric a film composed of from about 90 to 100 parts by weight of acetylene black and from about 60 to 110 parts by weight of plasticizer selected from the group consisting of esters and polyesters of sebacic, phthalic and phosphoric acids to 100 parts by weight of a co-polymer of vinyl chloride and vinyl acetate having a molecular weight of 18,000 to 30,000 and having a vinyl chloride content of from about 85% to 95% by weight.

Exit the loom. Arthur Johnson. *Textile Mfr. 75,* 367-8 (Aug. 1949).

The first non-woven fabrics were made from wool by a simple process that took advantage of the natural felting properties of the wool fiber. Cotton is now used in the production of non-woven fabrics which are suitable for curtains, towels and dust cloths, by the addition of an adhesive to the cotton web so that the fibers are cemented. The bonding agent has an important influence on the character of the non-woven tissue. Rayon is also made into simulated woven fabric by stamping and molding an extruded sheet so that its surface bears a resemblance to a woven fabric.

Felt for paper making machine. Olaf W. Berglund (to Orr Felt & Blanket Co.). Can. P. 448 160, April 27, 1948.

A method of treating felts, especially for paper making machines or the like, which includes the steps of impregnating the felt to be treated with a mixture of polyvinyl alcohol and an aqueous emulsion or solution of synthetic rubber or synthetic resin, and curing the mixture on the treated felt.

Felts, especially for paper making machines. Nathan T. Beynon (to Orr Felt & Blanket Co.). Can. P. 448 159, April 27, 1948.

A method of treating felts, especially for paper making or like machines, which comprises the steps of impregnating the felt to be treated with a mixture of aqueous rubber latex and urea formaldehyde resin, and curing the mixture on the felt.

Felts, especially for paper making or like machines.

Nathan T. Beynon (to Orr Felt & Blanket Co.). Can. P. 448 158, April 27, 1948.

A method of treating felts, especially for paper making or similar machines, which comprises the steps of impregnating the felt to be treated with an aqueous solution of urea-formaldehyde resin, and curing the resin on the felt.

Fibrous product. Joseph G. Curado & August C. Finalborgo (to Sun Chemical Corp.). Can. P. 448 768, May 25, 1948.

The process of imparting increased tensile strength and wet strength to unwoven carded cotton cellulosic fibrous materials, which comprises impregnating the fibrous material with an aqueous alkaline solution of ethyl hydroxy cellulose, subsequently removing excess impregnating solution, and subsequently treating the impregnated material with aqueous alkali.

Gas impervious fabric. Oscar W. Loudenslager & Joseph E. Wilson (to Wingfoot Corp.). Can. P. 448 213, April 27, 1948.

A light weight gas-impervious laminated composition which comprises a continuous sheet of a copolymer of 40 to 80% of vinylidene chloride and 20 to 60% of a vinyl ester cemented to a woven fabric of linear polyamide resin fibers by means of an adhesive comprising a polymer of 70 to 100% of vinyl chloride.

Impregnating paper making felts with polyvinyl alcohol containing emulsion. Orion W. Berglund (to Orr Felt & Blanket Co.). USP 2 482 237, Sept. 20, 1949.

In a method of making felt for paper making or like machines, the steps of (a) impregnating the felts with a mixture consisting of from 20 to 67 parts by weight of a 15% polyvinyl alcohol solution and from 80 to 33% of a 60% aqueous mixture of acrylonitrile butadiene copolymer; (b) removing any excess of impregnating material from the felt by mechanical means so as to leave a pick-up of from 10 to 25% of cured material; and (c) curing the impregnated felt at a temperature of from 200 to 225°F. for approximately 3 hours.

Machine for producing unwoven fabrics. Chas. C. Wilson, Herschel H. Cudd & Denzil V. Probasco (to West Point Mfg. Co.). USP 2 478 148, Aug. 2, 1949.

A machine for producing unwoven fabrics comprises carding means to provide a continuous source of fiber supply, a fiber transfer duct having a straight, confined, uninterrupted passage

of uniform cross-sectional area and a fiber-receiving end in close contact with the carding means provided with an air inlet near its contact end to permit entrainment of air. Means are provided for adjusting the air inlet a foraminous fiber-receiving member at the delivery end of the duct. Means are also provided for creating an air current through the foraminous member, duct, and air inlet to remove fibers from the carding means, transfer them by the duct in a continuous flow and deposit them at a predetermined point on the foraminous member to form a web. The web is removed from the foraminous member by other means which are provided.

Manufacture of compound fabrics. Hans Meyer (to Hart Productions Ltd.). Can. P. 448 716, May 25, 1948.

This invention provides a process for the manufacture of a compound fabric which comprises treating a fabric with a solution of an initial condensation product of a thermosetting synthetic resin, obtained by the condensation of a substance selected from the group consisting of urea and derivatives of urea and formaldehyde, and a solution of a water insoluble thermoplastic resin, drying the fabric at a temperature insufficient to convert the condensation product into the infusible and insoluble state, but sufficient to expel volatile solvents used in the aforesaid solutions, associating the thus treated fabric with at least one layer of uncoated and unimpregnated fabric and subjecting the associated layers to heat and pressure without the employment of a solvent for the thermoplastic resins at a temperature sufficient to convert the condensation product into the infusible and insoluble state, the thermoplastic resin being simultaneously caused to soften to such an extent that a firm bond with the uncoated fabric is produced.

Multiple impregnation of paper-makers' felt. Orion W. Berglund (to Orr Felt & Blanket Co.). USP 2 482 236, Sept. 20, 1949.

In a method of making felts for paper making machines, the steps of a) impregnating paper makers' felts with an emulsion of butadiene acrylonitrile copolymer having a solids content of from 10 to 30%; b) curing the rubber at approximately 200 to 225°F. for 3 hours; c) repeating impregnation with an emulsion of butadiene acrylonitrile copolymer having a solids content of from 10 to 30%; and d) curing the rubber at about 200 to 225°F. for approximately 3 hours.

Non-woven cotton fabrics. Anon. *Am. Wool Cot-*

ton Reptr. 63, 11, 47-8 (Sept. 8, 1949).

A discussion on the production of non-woven fabrics is given, and lists of quality advantages and uses for non-woven fabrics are presented.

Nonwoven fabric and method for making same. Chas. C. Wilson, Herschel H. Cudd & Denzil V. Probasco (to West Point Mfg. Co.). USP 2 477 675, Aug. 2, 1949.

A method of forming non-woven fabrics comprises carding fibers at a draft of at least 500, continuously delivering the carded fibers from a supply to a foraminous fiber receiving member by means of an air current through a confined uninterrupted path of equal area in cross-section throughout its length with the fibers suspended in the air current during travel. A web is formed on the member, then removed, bonded, and dried. The resultant non-woven fabric is formed of random laid fibers matted together in uniform relation and characterized by freedom from knots and tangles.

Plastic fabric. Theodore W. Stedman (to Firestone Tire & Rubber Co.). USP 2 447 824, April 13, 1948.

This invention provides a fabric from mono-filament strands or strips each of the strands or strips having one concave surface and one convex surface transversely thereof, the strands or strips consisting essentially of a vinylidene chloride copolymer and a plasticizer.

Process for producing coated elastic fabrics. Carleton S. Francis, Jr. (to Sylvania Ind. Corp., to Am. Viscose Corp.). Can. P. 448 904, June 1, 1948.

As an article of manufacture, an elastic textile fabric the elasticity of which is due to the inclusion in such fabric of elastic rubber thread comprising elastic rubber thread and having at least one continuous film of a thermoplastic elastomer thermally bonded to at least one surface of the fabric, the points of contact between the yarns in the fabric is free to stretch and the film follows the expansion and contraction of the elastic fabric without rupture or separation therefrom.

Production of pile surfaced materials. Harry W. Wintermute (to Research Corp. to Behr-Manning Corp.). Can. P. 448 405, May 11, 1948.

A method of forming pile-surfaced material which comprises establishing an electric field of periodically alternating polarity, positioning an adhesive-surfaced foundation material in the field and bringing comminuted fibrous material into

the field in condition to be deposited thereon, thereby to produce a uniform pile surface having the fibers oriented in endwise position on the adhesive surfaced material.

Production of pile surfaces. Archibald F. Meston (to Research Corp, to Behr-Manning Corp.). Can. P. 448 404, May 11, 1948.

This invention provides a process for the production of pile-surfaced materials which comprises positioning an adhesive-coated web of foundation material between superposed electrodes and adjacent the upper of the electrodes, supplying pile-forming fibres adjacent the upper surface of the lower of the electrodes, impressing an electric potential across the electrodes and subjecting the web to intermittent agitation.

Resin-impregnated woven textile fabric. Ross C. Whitman (to Kendall Co.). Can. P. 448 582, May 18, 1948.

A textile material adapted for industrial use comprising a resin-impregnated stiffened woven fabric having substantially no tendency to curl, composed essentially of sets of twisted cellulosic yarns and a resinous impregnation to at least 20% of the original base fabric weight, including a set of warp yarns and a set of filling yarns, with the yarns of both of the sets uniformly dispersed and arranged throughout the body of the fabric, the sets and yarns thereof being so related with respect to twist direction, twist multiple, yarn number and count as to produce a neutralized curling tendency and moisture-resistant stiffness characteristics.

Rug making in China. M. McBee. *Textile Industries 113,* 100 (Sept. 1949).

A brief description of the carding, spinning, dyeing, weaving, and finishing of rugs (at the Tung Fung Manufacturing and Trade Co.) is presented. The crude equipment that is used is quite a contrast to the modern methods used in America.

Smallwares No. 16: Astrakhan ribbons. A. Thompson & Sigfrid Bick. *Brit. Rayon & Silk J. 26,* 51-3 (Aug. 1949).

Pictures of 3 fabrics, cross-sections of the weaves, and designs are given. There is also a description, including several sketches, of the motions of the knife and the shuttle and wire or needle used to form the loop. These, of course, vary somewhat in looms of different manufacture.

Tufting machine. Artis E. Charles (to Carolyn Chenilles, Inc.). USP 2 478 743, Aug. 9, 1949.

In a tufting machine a plurality of yarns are

stitched by a bank of needles into a fabric web progressively fed to the needle bank from a supply roll a stitch length at a time by a feed shaft intermittently rotated by means operatively connected to drive shaft of the machine. Means are provided for unrolling the web from the supply roll at the same rate as it is fed past the needle bank by the feed shaft. The latter means comprise a roller on which the supply roll is mounted, and means operatively connect the feed shaft for rotating the roller.

Welders' protective clothing. *Welding Journal 28,* 506 (May, 1949).

A new development in safety clothing for welders is announced by Lester L. Brossard Co., 540 N. Michigan Ave., Chicago 11, Ill. In place of leather, this company is using Asbeston, a remarkable new burn-proof and heat-resistant no lint fabric, developed to meet the need for a durable, washable and comfortable lightweight protective garment that can be worn for hours without discomfort to the worker. This new fabric has been tested, approved and used by the U. S. Navy for fire-fighter suits. Washing or drycleaning does not harm this fabric, nor reduce its flameproof qualities. Aprons, arm sleeves, bibs and jackets are now available in this new material.

Wool type fabric. Will S. Nutter (to Goodall-Sanford, Inc.). Can. P. 448 299, May 4, 1948.

A novel fabric, to replace a standard wool fabric, formed in the usual way with 2-ply wool fiber warp and filling and having the same weight per square yard as the standard, consisting of yarns of wool fiber having at least 25% less filling picks and at least 25% less warp ends than in the standard, with the filling a single yarn having not more than 75% of the twist of the yarn plies of the standard, with the warp a 2-ply yarn the plies of which have a similar twist to, and half the size of, the single yarn, and in which the yarns are impregnated with a soft plastic in amount sufficient to equalize the weight of the fabric to that of the standard and acting to increase the tensile strength of the yarns above those of the standard, to smoothen the fibers and prevent felting and, by reasons of the adhesive characteristic, to minimize fiber and yarn slippage.

Woven textile fabric. Will. S. Nutter (to Goodall-Sanford, Inc.). Can. P. 448 300, May 4, 1948.

A woven textile flat fabric composed of animal, cotton and rayon fibers presenting an even uniform face with the several types of fibers so disposed as to be substantially indistinguishable and

presenting a springy crush-resistant well balanced body secured by and consisting of regularly interwoven warp and filling yarns each of substantially the same count in which the warp is a 2-ply yarn, one ply of which is a relatively low count low twist single cotton yarn and the other ply of which is a relatively high count rayon filament yarn well buried in the first ply, and in which the filling is composed of substantially 3 parts animal fiber and 1 part staple rayon fiber spun together as a single yarn of standard twist.

Fabric applications C 6

Honeycomb sandwich structures. H. C. Engel & T. P. Pajak. *Product Eng. 20,* 81-5 (Aug. 1949); 131-4 (Oct. 1949).

Cotton or glass fabrics, impregnated with phenolic or polyester resins, formed into a cellular "honeycomb" structure, and faced with metal or plastic-impregnated fabric, result in a strong panel of low weight but good stiffness. Part I of this article gives typical data and calculation methods for flexural and shear strength, column loading, and fatigue resistance of such structures. Part II reports weathering tests and thermal and acoustical properties and describes design and repair practice for applications of honeycomb structures.

TEXTILE FABRICS AND THEIR SELECTION. Isabel Wingate. 3rd ed. New York, Prentice Hall, Inc. 1949. 640 p. $6.00.

. . . The first part or set of 13 chapters covers fabric construction and customer demand. The chapters deal with such subjects as Why Study Textiles; Consumer Demand for Textile Fabrics; Importance of Cotton to the Consumer; Importance of Linen; Rayon and Nylon; Silk, Wool, and the weaves, such as plain, twill and satin, pile, jacquard, dobby and leno. She finishes the first section with Knitted Cloth and Finishing, Dyeing and Printing of Cloth. Part II deals principally with selection of appropriate fabrics and their end use. There is a summary after each chapter, review questions, projects and experiments. The book is written entirely from the consumer angle and does a good job in pointing out the uses and characteristics of the many fabrics on the market and their end uses.—*Rayon & Syn. Tex.*

STANDARD FINISHING D

Adsorptive capacity of cotton for sodium oleate. K. W. Gardiner & L. B. Smith. *J. Am. Oil Chemists Soc. 26,* 194-6 (Apr. 1949).

In this investigation of the adsorption of soap on cotton from solutions of pure sodium oleate, the adsorbate was shown to be an acid soap of the composition 1 NaOl: 1 HOl. The addition of free sodium hydroxide represses hydrolysis and reduces the adsorption. Acid soap may be removed from the fabric by repeated rinsing in boiling distilled water, or the adsorptive capacity for fresh acid soap may be restored by converting the adsorbed material to lime soap by rinsing in hard water. The resulting lime soap is largely retained by the fiber and on repeated washing accumulates in substantial amounts.

Autoclave for the continuous treatment of cloth at open width. Dungler. Indian P. 38 426 (through *J. Sci. Ind. Research (India)*).

A closed chamber, means for fluid-tight inlet and outlet of the cloth at open width and means for pre-impregnating the cloth with treating liquid.

Cellulose esters in detergents. E. Bartholome & K. F. Buschmann. *Melliand Textilberichte 30,* 249-53 (June, 1949); *in German.*

Investigation of the equilibrium of the distribution of dirt between washing liquor and cotton fibers disclosed that remarkably little dirt is retained on the fiber; especially in the presence of sodium salts of celluloseglycolic acid. The explanation is to be sought for in the fact that the sodium salt of celluloseglycolic acid displaces the dirt owing to favored adsorption on the fiber surface, whereby in addition only dirt already dissolved off is prevented from being absorbed again. These results, which were derived from the course of the corresponding adsorption isotherms and shows that the action of cellulose ethers takes place chiefly on the fiber and not in the liquor, are further confirmed by the fact that it was found impossible to trace the quantitative absorption of sodium salts of celluloseglycolic acid on the fiber directly by chemical means.

Conditioned water saves fuel, improves quality. E. Dalton White. *Textile World 99,* 108-9 (Aug. 1949).

A system of water treatment and control has resulted in the Richmond Hosiery Mills, Rossville, Ga., getting more steam from one boiler than they formerly did from 2, thus effecting a large fuel saving. The system includes filter tanks, softener tanks, a storage basin, daily plant analysis, and daily reports to a water control specialist.

Controlled finishing of nylon knit fabrics. A. J. Nisbet. *Am. Wool Cotton Reptr. 63,* 15, 18 (Sept. 15, 1949).

The Trianizing heat setting process handles fabrics on a continuous single thickness basis and accurately defines length and width dimensions. A pin tenter with automatic tension control, overfeed and uncurling devices is used; high temperature, high velocity air is employed as the setting medium. The process is applicable to knit fabrics of nylon and mixed or blended fibers, including nylon and cotton, wool, silk, and rayon.

Current trends in operating rubber covered rolls in textile finishing. Asa F. Fisk. *Am. Dyestuff Reptr. 38,* 646-8 (Sept. 5, 1949).

This discussion includes measurement of machine fatigue, high pressure operation of rubber covered rolls, savings in high pressure operation, application of recent research, and correlation of laboratory and production results.

Detergents in textile processes. Anon. *Textile Mfr. 75,* 340 (July, 1949).

This is a review of an address to the Lancashire Section of the Textile Institute by Dr. E. S. Paice. In the scouring of wool the most popular type of detergent is a secondary alkyl sulfate of petroleum origin although the non-ionic class of detergents based on polyethylene oxide have an advantage in not being absorbed by the wool fiber. The use of electrolytes, such as common salt, improves the efficiency of common synthetic detergents in the scouring of wool. The use of synthetic detergents in creating and stabilizing dispersions or emulsions of resin in water and in improving penetration into fabrics is discussed.

Element X in nylon. A. W. Staudt. *Textile Bull. 75,* 67-8, 70 (July, 1949).

See TTD: *6,* 468.

Enzymatic desizing agents. J. Voss. *Melliand Textilber. 30,* 246-47 (June, 1949); *in German.*

A short discussion is given of the various types of enzymatic desizing agents.

Improved equipment offered at Wet-Process Show. Anon. *Textile World 99,* 112-3, 226 (Aug. 1949).

The first Wet-Processing Equipment and Supplies Exposition displayed new dyeing and finishing equipment, much of it for the first time. Among the dyeing machinery were: stainless-steel dye becks; a piece-dye kettle equipped with a new jet-circulation system; and a dye beck attachment for tensionless and continuous dyeing. The finishing equipment includes a process-heating, gas-burning infrared generating system; a yarn-conditioning machine; a complete cloth-opening

range; a dampener to dampen fabrics without spots or streaks; and a swing tenter.

Looper. Roy H. Randall. USP 2 470 642, May 17, 1949.

A looper for use on tacker heads used in woolen mills for sewing cloth is claimed. The looper comprises a shank with a narrow cross arm on the end of the shank having a flat face on its rear side. A head extends across one end of the arm lying in a plane forward of the rear side of the arm. The forward extremity of the head forms a loop picking point and the other extremity forms a cast off point. The forward side of the arm is bowed outwardly from the head and meets the rear side of the arm at the opposite side of the shank to form a wedge shaped loop divider. The head in the rear of the loop picking point is provided with a needle passage extending along the side of the arm and across the axis of the shank.

New drying unit for textile processes. C. L. Wall. *Textile Mfr. 75,* 342-4 (July, 1949).

A means of increasing the output of existing drying machines is found in a light, compact, high-power drying unit which is placed in series with the conventional drier and removes water through a combination of air-blasting and convection drying in a superheated closed circuit at as high a temperature and air speed as possible.

Perlon processing. G. Mirtschin. *Melliand Textilber. 30,* 286-87 (July, 1949); *in German.*

The present article opens with a description of the possibilities of application of Perlon that present the best promise of success, and then goes on to deal more especially with its characteristic properties, describing its behavior in the course of processing on the basis of practical experience.

Preparation of a fast-to-light substantially white jute. Indian Jute Mills Assn. Res. Inst. Indian P. 37 868 (through *J. Sci. Ind. Research (India)*).

Subjecting bleached jute to an acetylation treatment.

Principles of textile bleaching. IV. Over-bleaching. A. J. Hall. *Fibres 10,* 125 (Apr. 1949).

This, the concluding article of the series, is a brief discussion of difficulties arising from over bleaching. Several tests for over-bleaching are also noted. For previous articles in this series see TTD: *6,* 382.

Producing permanent mechanical finishes on cellulosic materials. Jos. Bancroft & Sons Co. Australian P. 131 804, Apr. 9, 1946.

A process whereby effects (such as glazing, schreinering, beetling or embossing) on fabrics such as textiles or paper, are rendered permanent to washing or dry cleaning comprises forming in situ in or on the fabric, a resinous material, by reacting a water soluble polyvinyl alcohol or a water dispersion thereof, with an aldehyde (preferably in the presence of a catalyst) by the application of heat, after the reactants have been applied (preferably in the form of an aqueous size), the material damp-dried, and after the mechanical finish has been effected.

Shrinkage control at 165 degrees. Anon. *Am. Wool Cotton Reptr. 63,* 19 (Sept. 15, 1949).

Polyethylene fabrics can be stabilized to less than 2% residual shrinkage by first treating the fabric in a semi-relaxed state with hot water, hot air or steam and then giving the fabric a brief steam treatment on a decating machine. Properties, uses, and the production of polyethylene monofilaments are briefly discussed.

Some defects arising in the finishing of woolen and worsted fabrics. C. S. Whewell. *Am. Dyestuff Reptr. 38,* 637-41 (Sept. 5, 1949).

See TTD: *6,* 564.

Survey of silk weighting. Allan G. Tyler. *Textile J. Australia 24,* 404-7, 464 (July, 1949).

A brief history of the silk weighting practice is given. The modern method is described and the materials used, which include tin, aluminum, zinc, magnesium, iron and some of the rare earths such as zirconium, are noted. The advantages of weighting, such as improved drape and hand, greater "cover" and decreased slip of warp over filling threads are cited. The disadvantages of weighting, which include tendering of the fibers and passing off weighted materials as pure silk, are also mentioned.

Textile dryers need constant temperature control. A. M. Zeller, Jr. *Rayon & Syn. Tex. 30,* 68-70 (Sept. 1949).

Control is needed to insure stable temperature, to prevent over-heating, to provide reproducible results, and to lower drying costs. Fluctuations in steam supply pressure due to plant conditions, weather conditions, etc. cause variations in temperature in the dryer.

Use of automatic controllers in textile drying. Leo Walter, *Textile Mfr. 75,* 328-31 (July, 1949).

The simplest mode of drying control is "on/off", or 2-step control, whereby the steam control valve

is either fully open, when temperature is below the set point, or fully closed, once the desired temperature has been reached. In "proportional" control any disturbance in heat balance causes a gradual reaction from the controller. In another type of control, described as "proportional-plus-floating", the floating component is superimposed to the proportional component and speeds-up movement of the control valve at the beginning of the control reaction. Nearer the set temperature, however, the proportional component dominates. "Reset" control acts not only on the amount of deviation, in case of a sudden load change, but also on the intensity with which the process temperature changes. The choice of controller is dependent on 2 main factors: (a) process characteristics, and (b) desired accuracy of control.

Use of instruments in bleaching. James M. Bennett & C. W. Bowden, Jr. *Can. Textile J. 66,* 42-4 (Sept. 2, 1949).

Uniform whiteness in bleaching is produced with a minimum consumption of steam and water by the use of properly engineered instrumentation and automatic controls. Recording tachometers simplify the problem of controlling the rate of cloth travel and potentiometers with pneumatic action are used to control the temperature of the saturators, J-boxes and washers.

DYEING AND PRINTING E

Affinity of fibers for dyes. J. W. Shirley, Riegel Dev. Labs. *Rayon & Syn. Tex. 30,* 81-2 (Oct. 1949).

Whether affinity is a chemical, mechanical, or electrostatic attraction between dye and fiber, the center of the attraction is the interface between the dye in the dyebath and the fiber. As more information on this interface becomes available, a more detailed explanation of the dyeing procedure will result. This might ultimately lead to a greater simplification of the dyeing procedures for the dyestuffs exhibiting excellent fastness properties.

Azo dyes: coupling. W. Hees. *Melliand Textilber. 30,* 395-63 (Aug. 1949) ; *in German.*

When dyeing with Naphthol AS an insoluble azoic dye is produced on the fiber from the naphthol and the diazotized base or the dyeing salt. The optimum coupling conditions are discussed, particularly with respect to practical aspects.

Copper-containing dyes. R. Wizinger. *Textil-Rundschau 4,* 216-19 (June, 1949) ; *in German.*

This discussion presents additional information on the subject, which was previously considered by another author.

Dyeing of Perlon silk and Perlon fibers with vat dyes. J. Muller. *Melliand Textilber. 30,* 103-10 (Mar. 1949) ; *in German.*

Perlon silk and Perlon fibers are admirably adapted for dyeing with vat dyes. Compared with vegetable fibers, the temperature of the dyebath is very much higher (80-90°C), or the goods must be given a preliminary steaming under pressure. A suitable selection of the vat dyes at disposal must be made, because they are not all equally well adapted for the purpose. Details are given especially in regard to the inferior fastness to light and friction observed in dyes of that type. Owing to the considerably greater effects of temperature with rayon (whereby affinity depends on the temperature) and on account of the poorer leveling property, a method of regulating the temperature by stages is necessary in order to turn out level dyeings. Perlon fiber has a higher absorption property for vat dyes than Perlon silk.

Dyeing of rayon. Anon. *Textile Mfr. 75,* 394-5 (Aug. 1949).

This is a review of a paper presented by John Boulton (Courtaulds, Ltd.) at the annual meeting of the Society of Chemical Industry, Manchester, England, July, 1949. Dyeing consists of the introduction of colored molecules into the spaces between the linear chains which constitute the fiber. The actual process of dyeing takes place by swelling the amorphous regions in the filament after which single molecules of the dyestuff are absorbed on the surface and then diffuse inwards and may adhere to the fiber molecules by the action of hydrogen bonding. Speed of dyeing is largely a matter of overcoming the potential barrier, or charge, on the surface of the fiber. The charge may be reduced by adding an electrolyte, thus allowing dyeing to proceed at a faster rate.

Dyeing of wool-nylon blends. G. T. Hug. *Am. Dyestuff Reptr. 38,* 661-2 (Sept. 5, 1949).

For dyeing wool-nylon blends neutral dyeing acid colors produce the best unions with generally good fastness properties. Pale to medium bright shades may be obtained with level dyeing acid colors, but care must be used in their selection to avoid any blocking effect. Best fastness is offered by chrome colors. Nylon's affinity for all types of dyestuffs can be decreased by the addition of a long-chain alcohol sulfate to the dyebath. Nylon-white effects are best obtained by resist-

ing the nylon either in the form of cut staple or yarn before spinning and weaving.

Dyeing Perlon with Palatine Fast dyes. K. Anacker. *Melliand Textilber. 30,* 256-58 (June, 1949); *in German.*

The dyeing property of a number of Palatine Fast dyes on Perlon was determined and found that it is, generally speaking, very good, whereby the monosulfonic acids give deeper shades on an average than the disulfonic acids. The fastness of dyeings with Palatine Fast dyes is very high and they surpass the Celliton Fast dyes in fastness to washing, milling and water. Their leveling property is good. A number of Palatine Fast dyes are well adapted for dyeing mixed fabrics of Perlon and wool. When dyeing deep shades, the Palatine Fast dye often dyes the wool a darker shade than the Perlon, but such differences can be leveled out by topping with Celliton Fast dyes.

Fundamental study of aging conditions in the vat ager. Frederick Fahnoe. *Am. Dyestuff Reptr. 38,* 663-72, 685 (Sept. 19, 1949).

This investigation was a fundamental study undertaken with a view toward learning the effect of every variable which might conceivably affect the process. It was directed toward the prediction of aging conditions when the status of each of the variables is known. The determination of the proper operating values for each variable led to recommendations for instrumentation to control the continuous vat ager. There are 48 references to the literature and 24 to patents.

Glycerine in textile dyeing, printing and finishing. Milton A. Lesser & Joyce Cotter. *Rayon & Syn. Tex. 30,* 83-4 (Oct. 1949).

Many of the refinements in color and finish to which modern textiles owe their chief beauty are due to trihydric alcohol glycerine. Several basic formulas which use glycerine in the production of printing pastes made with various kinds of dyestuffs are presented.

Heating dye vats. Anon. *Textile Mfr. 75,* 345 (July, 1949).

Since the actual process of dyeing absorbs no heat, most of the heat loss in dyeing occurs through evaporation from the surfaces of the material and dye liquor. Investigation of heat losses from dye vats showed that the steam used for maintaining temperature was reduced from 950 lb./hr. to 538 lb./hr. by fitting shields between hood and vat, front, back and sides. In addition, since from 20 to 40% of the total steam is used in raising the dye to temperature, steam consumption may be reduced between 6 to 12% by the use of a heat exchanger, in which the heat in the spent dye liquor may raise the temperature of the water for the next batch by 60° to 80°F.

History of package-dyeing. Development of Obermaier Pressure dyeing machines. K. M. Chokshi. *Indian Textile J. 59,* 890-4 (July, 1949).

The development of package dyeing machines is traced from the earliest machines, which were nothing more than circular metal pans heated by fire, to the present machines in which the dye liquor is forced through the material uniformly under pressure. Also discussed are the advances made in the development of efficient hydro-extracting and drying machines to keep pace with the newer dyeing equipment.

Improvements in coloring processes. I.C.I. Ltd. Indian P. 38 260 (through *J. Sci. Ind. Research (India)*).

Dyeing in the presence of benzyl alcohol.

Method for handling and treating tubular fabric bodies. Matthew E. Bachleda (to Will F. Stahl). USP 2 474 967, July 5, 1949.

In accordance with this invention, a helical coil spring core may be readily inserted into or removed from a tubular fabric body without injuring either the body or the core. Thus, a spool of yarn may be wound in tubular form on any suitable core and then transferred to the helical coil spring core for the dyeing or treating operation. The core in the course of this operation becomes embedded in the fabric or yarn, but is readily removed therefrom. The spool may then be completely unwound without difficulty. If desired, the yarn may be wound upon the coil spring core initially, using fabric sleeve on the core as a base for the winding operation.

Method of producing color mixtures. Syreeni. Indian P. 36 795 (through *J. Sci. Ind. Research (India)*).

Mixing dyestuffs or coloring materials according to a classification.

New method for the simultaneous dyeing of mineral khaki and vat dyes on textile materials. Nabar & Daruwala. Indian P. 40 755 (through *J. Sci. Ind. Research (India)*).

The mineral salts, vat dyes and caustic soda being mixed together to form the dye liquor and the cloth subsequently subjected to the action of steam and hydrosulphite.

New principles in the continuous dyeing of wool. R. Casty & E. Krähenbühl. *J. Soc. Dyers Colourists 65*, 381-6 (Aug. 1949).

A continuous method of dyeing wool on a laboratory scale is described. Wool impregnated with a dye is treated in a boiling solution of dilute acid and dyed level in 2-10 min. with acid dyes and in 4-20 min. with chrome dyes or ester salts of leuco vat dyes. It is claimed that the principles of continuous dyeing can be successfully applied to wool in all stages of manufacture. No machinery, however, is available which can be used to try this method of dyeing on a long run.

Package and piece goods dyeing with pigment colors. H. A. Thomas. *Can. Textile J. 66*, 43-5 (July 8, 1949).

This is the third and final part of a discussion of package and piece goods dyeing. (For Parts I and II see TTD: *6*. 472). Topics covered include the vat pigment padding process, the Aridye process, criteria for pigment coloration, and a detailed example of pigment coloration based on a Courtaulds patent. The advantages and limitations of the process are also noted.

Printing shirting in Ireland. Part II. Anon. *Textile Industries 113*, 113, 115, 117, 121 (Sept. 1949).

Details of printing shirting as practiced in Ireland are discussed, including: proper conditioning of blotch printed fabrics prior to ageing; ageing techniques, equipment, time, and difficulties; methods of oxidation; suggestions for matching shades; and the standardization of colors. (For Part I see TTD: *6*, 717).

Progress in vat and naphthol dyeing methods. R. H. Nuttall. *Am. Wool Cotton Reptr. 63*, 35-6 (Oct. 13, 1949).

A summary of an address on vat and naphthol dyeing presented before the Am. Assoc. of Textile Chemists and Colorists is given.

Relation between chemical constitution and dyestuff linkage. H. Gerstner. *Melliand Textilber. 30*, 253-256 (June, 1949); *in German.*

It is shown that the behavior of the direct dyes when dyeing animal and vegetable fibers can be described in a uniform way, because the ion theory explains without any contradiction the way in which the dyestuffs are attracted by the fibers. Diffusion of the soluble dyestuffs into the interior of the fibers depends on the size of the particles. The process is reversible, for which reason the binding of the dyestuffs that have penetrated into

the fiber can be effected partly only by the fiber substance, partly only by characteristic groups of atoms of the dyestuffs that have diffused in. That binding of the direct dyes, which is concerned in fastness properties of the dyeings, takes place (in the presence of animal fibers) primarily in accordance with the formation of a salt of the sulfonic acid groups of the fiber substance, and (in the presence of vegetable fibers) as a reaction between the free hydroxyl groups of the cellulose with azo groups of the benzidine and triazo dyes.

rH measurements in textile processing. A. Schaeffer. *Melliand Textilber. 30*, 111-15 (Mar. 1949); *in German.*

This paper first presents a study of the theoretical principles together with the physical derivation of the laws of the oxidation-reduction system and the definition of the rH value. The second part describes practical measurements of the rH value, i.e., dealing both with potentiometrical measurements, as well as with measurements in connection with textile finishing and points out that they might acquire great importance for the control of operations in vat dyeing, if the still existing gaps in the series of oxidation-reduction indicators were closed. Tables of practical measurements in the field of vat dyeing are appended.

Solubilization of dyestuffs with surface active agents. Mid-West Section, AATCC. *Am. Dyestuff Reptr. 38*, 728-32 (Oct. 3, 1949).

It was shown that surface active agents serve as true solubilizing agents for a number of the dyestuffs in current dyeing use. The absolute effect observed appears to be greater for the more insoluble dyes. Dyeing trials conducted on staple nylon suggest that there may be an optimum solubility range of the dyestuff to produce the best dyeing properties, greater solubility exerting too great a retarding effect and lesser solubility giving rise to unevenness.

Study of vat dyestuffs. Max Bender. *Rayon & Syn. Tex. 30*, 81-4, 87-90 (July, 1949).

The chemistry and applications of vat dyes are discussed at length. 13 references.

Decoration of fabric in multicolor relief. Frank C. Hewitt (to Hampton Co., to The Aspinook Corp.). Can. P. 448 846, June 1, 1948.

A fabric having a representation of leaves on a contrasting ground in which elongated portions of the fabric included in the leaves, and of a length not more than twice their width, are printed with a permanent resist and are un-

shrunken and buckled to produce a simulation of reality in the leaves, the surrounding fabric being shrunken and flat.

Lustrous pattern effects on textile fabrics. Joseph Bancroft & Sons Co. Australian P. 133 806, Apr. 9, 1946.

A glazed pattern is obtained on an unglazed background by printing with a paste which contains a thickener, a lubricant and resin-forming material, drying the fabric to approximately 10% above its normal moisture content, and then hardening the resin by friction glazing, the fabric prior to the printing being treated with a sizing solution containing at least one of the following: (a) sizing preparation which will impart the same frictional characteristics to the unprinted portions of the fabric as those imparted by the printing paste; (b) a diazo compound; (c) a coupling compound which will react with a diazo compound to form a dye. The sizing preparation (a) is always present when the printed pattern covers less than 80% of the total area of the fabric, and either (b) or (c) is included in the printing paste while its complement is included in the sizing solution, thus a colored pattern is developed *in situ* in the areas printed.

Machine printing of textile fabrics. C. B. Peake. *Can. Textile J. 66,* 43-44, 46 (Mar. 18, 1949); 60, 64, 66 (Apr. 15, 1949); 44-6, 48 (Aug. 5, 1949); 47-51 (Sept. 2, 1949).

Part I—The various methods of fabric printing are outlined: block printing by hand or machine; stencilling and screen printing; and machine printing from engraved metal rollers. The last method is described in detail. Part II—This is a discussion of vat, indigosol, azoic and direct colors, modern pigment printing colors, color mixing and straining. Part III is a discussion of styles of printing, the application of vat colors, the indigosol colors, the Naphthol-Nitrile process, the application of rapid fast colors and rapidogen colors. Part IV is a discussion of the make up and application of modern pigment colors, discharge and resist printing, ageing and steaming, soaping, and other aspects of the machine printing of textile fabrics.

Photographic textiles give new look. New method of printing textiles invented in Australia. M. Lawrence & J. Gallagher. *Indian Textile J. 59,* 880-1 (July, 1949).

A negative of the photograph to be produced is made first. Next the negative is photographed through an engraver's half-tone screen and the

half-tone positive transparency thus obtained is affixed to a glass support. The design is then transferred by contact to a silk screen previously sensitized. The silk screen thus obtained is used to reproduce the design on textiles as in the normal silk screen process.

Printing of nylon piece goods. A. K. Saville. *Am. Dyestuff Reptr. 38,* 673-4 (Sept. 19, 1949).

See TTD: *6,* 789.

SPECIAL FINISHING F

Amido condensates for textile processing. Imperial Chemical Industries of Aust. and N. Z. Ltd. Australian P. 133 786, June 28, 1946.

Condensation of fatty acid amides, the corresponding monacyl ureas and analogous esters of carbamic and allophanic acid with fatty alcohols or of the methylol derivatives thereof, with a lower alkyl ether of a methylol derivative of melamine are caused to react with a salt of a tertiary amine and preferably also simultaneously with formaldehyde until a water soluble product is obtained. Textiles may be impregnated, to gain softness and water repellency, with a solution or suspension of the above compound and submitted to a short heat treatment such that the impregnating products undergo decomposition.

Causes and elimination of fabric shrinkage. E. C. Pfeffer, Jr. *Text. J. Australia 24,* 122 (April 20, 1949).

A discussion of why and how much textile fabrics shrink—the effect of manufacturing and finishing operations and established methods of preshrinking fabrics.

Crease-resistant finishes with urea-formaldehyde resins. Leonard Shapiro. *Rayon & Syn. Tex. 30,* 39-41 (Aug. 1949).

This discussion includes the following topics: 1) effect of fiber, yarn, and fabric structure on crease-resistance. 2) effect of type and quantity of resin, 3) preparation of goods, 4) the impregnating bath, 5) padding and drying the goods, 6) curing, 7) washing and neutralization, 8) finishing, and 9) effect of urea-formaldehyde resins on dyes.

Estimation of 2:4-dinitro-α-naphthol and Martius Yellow in woolen fabrics. C. N. Tewari and others. *J. Soc. Chem. Ind. 68,* 126-7 (Apr. 1949).

See TTD: *6,* 312.

Fire retardant coatings for aircraft. Anon. *Tech. News Bull. Nat. Bur. Standards 33,* 101-3 (Sept. 1949).

See abstract of paper by Weissberg, Hansberry & Kline (*Ind. Eng. Chem. 41,* 1742-9 (Aug. 1949) (TTD: *6,* 793)).

Flame resistant chemical. *Oil, Paint & Drug Rept. 156,* 4 (Sept. 5, 1949).

The Du Pont Company has announced the discovery and development of a flame resistant chemical for cotton and rayon fabrics. Trade-named "Erifon," the compound is a solution of Ti and Sb salts which is said to give cotton and rayon fabrics a flame resistance which is durable to dry cleaning, normal home laundering and weathering, when properly applied.

Fungicidal activity of bisphenols. Paul B. Marsh, Mary L. Butler & Bernice S. Clark. *Ind. Eng. Chemistry 41,* 2176-84 (Oct. 1949).

Previously reported work (*Ind. Eng. Chemistry 38,* 701-5 (July, 1946) (See TTD: *3,* 297)) has been extended by the testing of 39 additional bisphenols and related compounds as mildew preventives on cotton fabric. Total compounds tested thus far is 73. High activity per unit weight on fabric as fungicides appeared correlated with certain generic types of chemical structure. Though no single compound has a uniquely high potency, 2, 2′-methylenebis (4-chlorophenol) was selected arbitrarily as a reference standard of high activity. Types of bisphenolic bridges, types of substituents on the rings, degree of ring substitution, molecular weight, and other variables were then correlated with activity referred to this standard.

Fungus-proofing composition. Paul G. Benignus (to Monsanto Chemical Co.). USP 2 476 235, July 12, 1949.

A fungus-proofing composition for the treatment of cellulosic substances comprises a water-in-oil emulsion in which the ratio of water phase to oil phase is in the range of 1:4 to 4:1, the emulsion having an oil phase comprising ½-5% of a water-insoluble fungicidal agent selected from the group consisting of water-insoluble salts of 8-hydroxyquinoline and of pentachlorophenol, 2-10% of an oil modified alkyd resin made from a polyhydroxy alcohol, phthalic anhydride and a modifying substance selected from the group consisting of fatty oils and fatty acids, the resin containing 20-40% of phthalic radical calculated as phthalic anhydride, the resin being soluble in mineral spirits, 3-25% of a chlorinated diphenyl mixture containing from 20-68% of chlorine, and mineral spirits.

Insectproofing cotton bags. Richard T. Cotton, Justus C. Frankenfeld & W. B. Strickland. *Textile Industries 113,* 94, 264-6 (Oct. 1949).

Results of a study on the insectproofing of cotton bags, which hold milled cereal products, made under the Research and Marketing Act, are presented. It is reported that cotton bags treated with pyrethrins, alone or mixed with piperonyl butoxide, will protect flour packed in them from insect infestation for at least 7 months. The treated cloth is not materially changed in appearance, and its repellency is not affected by exposure to light. Methods of impregnating the bags are also discussed.

Manufacture and application of new textile treatment agents. I.C.I. Ltd. Indian P. 38 010 (through *J. Sci. Ind. Research (India)*).

Mixing polycarbonate with formaldehyde.

Method of coating fabric with a modified haloprene composition. Rob. N. MacDonald & Henry S. Rothrock (to E. I. du Pont de Nemours & Co.). USP 2 465 336, Mar. 29, 1949.

The process of preparing coated fabrics comprises milling a composition having the following formula by weight: Chlorine-2-butadiene 1,3 plastic polymer—400, zinc oxide—180, magnesium oxide —150, calcium carbonate—150, pigments—60, adding 42.5 parts of 68% chlorinated polyethylene to 200 parts of the above mixture together with a solvent, applying sufficient coats thereof to deposit 13 ounces of non-volatile components per yard of 50″ width to a sateen cotton fabric, and thereafter vulcanizing the coating by heating for 2 hours at 260°F.

New method of mothproofing. *Text. J. Australia 24,* 133 (April 20, 1949).

A new method of mothproofing wool consists in subjecting the wool to a reducing agent of lower alkyl mercaptans, thioglycolic acid and beta-mercaptoethanal. The pH of this reaction is kept below 9 to convert about one-third of the disulfide linkages of the wool into sulph-hydryl groups.

Plastics and the textile industry. E. V. Giles. *J. Textile Institute (Proc.) 40,* P831-43 (Aug. (1949).

The plastics and plastic-like substances which are used by the textile industry are divided roughly into 2 main classes, convertible and non-convertible or thermoplastic and thermosetting. Their uses are discussed under 4 headings: 1) as com-

ponents of textile plant or machinery, 2) as actual textile materials, 3) as impregnating materials for textiles, and 4) as coatings or surfacing materials for textiles. A number of plastics and their uses are discussed. These include Nylon (polyamide), Terylene (polyester), Oron (acrylonitrile or polyvinyl cyanide), Vinyon and N Vinyon (co-polymers of vinyl-chloride and vinyl-acetate, and vinyl-chloride and vinyl-cyanide respectively), Velon, Saran, (polyvinylidene-chloride), and Fibro (viscose rayon staple).

Properties of Kaurit 140. A. Hartmann. *Melliand Textilber. 30,* 70-2 (Feb. 1949); *in German.*

The properties of the textile finishing agent Kaurit 140 are described and the methods of its application for producing a finish resistant to swelling and finishes fast to laundering, as well as for the treatment of wool are noted.

Recent experiments in cloth finishing. C. S. Whewell, A. Charlesworth & R. L. Kitchen. *J. Textile Institute (Proc.) 40,* P769-83 (Aug. 1949).

A series of experiments carried out with the aim of developing new finishes, increasing production, and obtaining more effective finishing procedures is described. The effect of changes in pH on the shrinkage characteristics of various materials such as cottons, woolens, and pile fabrics are discussed and the optimum pH value for properly setting each of them is given. Also discussed in detail are scouring, felting, and production of shrink-resistant wool fabrics.

Shrinkage control of wool by melamine resins. Part I. Microscopical observations. C. Maresh & G. L. Royer. *Textile Research J. 19,* 449-57 (Aug. 1949).

Microscopic examination of methylated methylol melamine resin-treated wool fibers indicates that the resin is located essentially at the scale region of the fiber. Shrinkage control is produced by: 1) the change in the directional coefficient of friction caused by the deposition of the resin essentially at the scale interstices, and 2) the change in the elastic properties of the fiber by the formation of a semi-rigid sheath around the elastic cortex. The role played by fiber-bonding is considered of lesser importance.

Shrinkage control of wool by melamine resins. Part II. Torsional rigidity and elastic properties of single fibers. H. R. McCleary & G. L. Royer. *Textile Research J. 19,* 457-61 (Aug. 1949).

Treatment of single wool fibers with a methylated

methylol melamine-type resin has no effect on the work of extension, but produces a marked increase in the torsional rigidity. Successive extensions of a treated fiber cause gradual decreases in the rigidity, which approaches that of the untreated fiber. It is concluded from this that resin treatment produces shrinkage control primarily by modifying the surface structure of the wool fiber.

Shrinkage control of wool—chlorination processes. Jack Epelberg. *Am. Dyestuff Reptr. 38,* 526-8, 533-4 (July 11, 1949).

In this discussion of shrinkage control of wool, the advantages and disadvantages of the following processes are noted: 1) Harriset, 2) Protonized, 3) Schollerized, 4) S. W. (Sanforlan), and 5) Negafel. The Hypol, Kroy, and Kelpie processes are mentioned briefly.

Treatment of hydrogen-donor textile materials and products thereof. Arthur S. Nyquist & Edw. L. Kropa (to Am. Cyanamid Co.). USP 2 468 716, Apr. 26, 1949.

A process of reducing the felting and shrinking tendencies of a protein-containing textile material comprises (1) impregnating such a material with an inert, volatile organic liquid-water dispersion of a reactive product of polymerization of a mixture containing, by weight, (a) from about 3 to about 50% of an isocyanate represented by the general formula $CH_2=CH-Ar-N=C=O$ where Ar represents an aromatic hydrocarbon nucleus, the vinyl and isocyanate groupings being each directly attached to the aromatic nucleus, and (b) from about 97 to about 50% of a different compound which is copolymerizable with the isocyanate of (a) which contains a single $CH_2=C<$ grouping and which is free from a hydrogen atom reactive with an isocyanate grouping, the take-up of the said dispersion being such as to deposit in the textile material at least about 1% by weight, based on the dry weight of the textile material, of the said polymerization product, and (2) heating the resulting treated material to volatilize the water and the organic liquid from the said dispersion and to effect reaction between the said textile material and the said polymerization product, thereby insolubilizing the latter.

Treatment of materials composed partly or wholly of wool or similar fibers. Peter Alexander (to Wolsey Ltd.). USP 2 470 453, May 17, 1949.

Wool may be rendered substantially unshrinkable by exposing the wool to the action of vibrations of a frequency of between 8 kilocycles per second and

500 kilocycles per second while immersed in water. The vibrations have an intensity at least sufficient to coagulate a 0.1% solution of egg albumen at the iso-electric point and at a temperature below 50°F in a period of less than five minutes.

Treatment of nylon webbing to increase resistance to abrasion. C. A. Willis. *Cado Technical Data Digest 14*, 15-25 (Aug. 1, 1949).

A method of application of polyvinyl butyral resin to nylon parachute harness webbing to provide increased abrasion resistance is described. Results of evaluation of webbings treated with several resins, using a new abrasion testing device, are given. Data on webbings before and after outdoor and accelerated weathering for various periods are presented. It is shown that an application of from 5 to 7% of the best treatment is sufficient to provide a high degree of resistance to abrasion.

Urea-formaldehyde resins for textile finishing. Leonard Shapiro. *Rayon & Syn. Tex. 30*, 39-41 (July, 1949).

The chemistry of urea-formaldehyde resins, the latent acid catalysts used in curing and an evaluation of the resin and resin finished are discussed.

Weathering characteristics and rot resistance of cotton duck treated with the copper complex of nitrosophenylhydroxylamine. C. H. Bayley & Muriel W. Weatherburn. *Can. J. Res. 27F*, 112-18 (March, 1949).

Unbleached cotton tentage duck treated with the copper and copper-iron complexes of nitrosophenylhydroxylamine were found to show considerable resistance to rotting in soil burial tests but gave evidence of enhanced actinic degradation and loss of treating compound as a result of outdoor weathering for 3 months during the summer. With samples containing a higher concentration of the complexes this degradation was more severe. Breaking strengths and loss of color under various conditions are tabulated in detail.

Wool shrinkage control by resin application. R. W. Moncrieff. *Textile Mfr. 75*, 388-91 (Aug. 1949).

This is a review of various methods of controlling the felting of wool by means of resins. The work of Markert on cellulose acetate, and of Speakman on anhydrocarboxyglycine, di-isocyanates, ethylene sulfide, and methyl methacrylate are considered from the standpoint of the fundamental mechanism involved in preventing the felting phenomenon. Although the major factor appears

to be the covering or masking of the scales by the polymer, in many instances direct chemical combination occurs between the resin and the amino groups in the side chains of the wool.

Wool shrinkproofing baths containing a chloroprene polymer. John B. Rust (to Montclair Research Corp.). USP 2 471 456, May 31, 1949.

A bath for shrinkproofing wool consists of an aqueous stable emulsion containing a synthetic chloroprene polymer of 100% polymerization, in an amount to give from 1 to 25% by weight of polymer deposition on the wool; a non-cationic or anionic emulsifying agent; and at least 25% by weight of the polymer present of a water-soluble neutral salt of an alkali metal conditioning electrolyte. The pH of the bath is below 7.

TESTING AND MEASUREMENT G

Available: controlled carpet beetle larvae. Wm. Anderson. *Am. Dyestuff Reptr. 38*, 636 (Sept. 5, 1949).

It was established that the activity of carpet beetle larvae was dependent on age of the larvae and breeding conditions. In order to standardize test results and eliminate certain variables, the U. S. Testing Co. is now offering to the technical public larvae certified by the company as being 5 months old and meeting all the requirements of the AATCC.

Cellulose fibers: elastic properties. K. Lauer. *Kolloid-Z. 112*, 110-20 (Feb.-Mar. 1949); *in German.*

Studies were made to determine relations between the bending strength of fibers and their wear properties; no positive results were obtained, since the differences present were completely overshadowed by the dependence on titer. Measurements were made on a large number of different types of rayon and staple fibers.

Tensile strength of jute strands in relation to humidity and temperature. S. M. Mukherjee & M. K. Sen. *Textile Mfr. 75*, 319-21 (July, 1949).

A procedure is described for measuring the tensile strength of jute strands by a method similar in principle to the flat bundle tests as used for cotton. Weighing each specimen after it is broken eliminates the effect of differences in cross-sections of the fiber strands and permits expressing the results in grams per denier. Using this method it is found that Tossa jute is stronger than White jute, and the strength decreases from

the root to the tips of the strand. Strength increases with RH up to a limit between 40-50% RH after which it decreases. Strength decreases with increase in the period of heating at a rate which is greater at higher temperatures. The effect of heat in reducing the strength of fibers is ascribed to simultaneous formation of ether linkages and oxidative degradation.

TESTING YARNS AND FABRICS. Harry P. Curtis. 4th ed. London, Pitman & Sons, 1948. 241 p. $1.75.

This little book on testing by the author of "Glossary of Textile Terms," "Manchester Piece Goods" and a "Dictionary of Textile Terms," is now in its fourth edition. It was first published in 1926, again in 1930, and 1938. It is primarily intended for those who purchase textiles and is written in simple layman's language and scientific or advanced methods are *not* included. The author expresses hope that a standard system of testing will be issued soon in England. The book has 19 small chapters which cover dissection of woven fabrics such as width, length, warp and weft. ends and picks, etc. Also deciding what material was used for the yarns, chemical tests on fibers, yarn testing, cloth examination, sizing and size examination; cloth testing for strength, fastness of color, weights and a discussion of the Fowler Calculator. There are 94 illustrations including Scott Testers, Inc. machines, the only American tester represented. It is intended for house holders, garment manufacturers, retailers and laundry owners and consumers. It reflects British testing methods.—*Rayon & Syn. Tex.*

TEXTILE LABORATORY MANUAL. Walter Garner. London. The National Trade Press Ltd., 1949. 478 p. Price: 30s.

This book has been written in an attempt to bring together in one volume a range of analytical and testing methods sufficient to enable most of the problems likely to be encountered in a textile works laboratory to be investigated. The methods described cover all textile fibers and the fabrics manufactured from them, such as wool, hair, vegetable and filament fibers, including natural silks, synthetics, and glass. The physical and chemical properties of yarns and fabrics have been dealt with in detail, and separate sections have been allotted to such subjects as textile oils, dyes, textile chemicals, detergents, and wetting agents. The methods to be used for carrying out biological, optical, and viscosity tests are described as fully as space permits.—*Can. Textile J.*

Torsion test for fiber strength. P. A. Koch. *Textil-Rundschau 4,* 199-211 (June, 1949); *in German.*

A method was devised for testing the strength of textile fibers which is called "supertorsion," and which consists of a torsion applied until break. The angle of supertorsion is calculated from the index of supertorsion of the fiber or filaments and their fineness or diameter. This angle is independent of the fineness of the fiber, and presents a measurement of the transverse resistance of the fiber. The conditions for the test are discussed. Application of the new test method to various fibers is described.

Clothing and fabrics G 1

Microscopic examination of worn textile articles. Gladys G. Clegg. *J. Textile Inst. (Trans.) 40,* T449-80 (Aug. 1949).

This paper deals essentially with the microscopical examination of fibers from worn garments, the mechanism of their breakdown and their comparison with fibers from clothes which have been subjected to laboratory tests. The investigations carried out led to the conclusion that: 1) fabric failure in service is caused primarily by a weakening of the structure caused in turn by mechanical breakdown of the individual fibers; 2) the mechanism of breakdown is essentially the same for all fibers; and 3) the breakdown of the fibers is caused by transverse cracking which is the result of flexing and bending incurred during wear.

Study of nylon tricot snagging. R. L. Kroll & K. R. Williams. *Rayon & Syn. Tex. 30,* 111-13 (Sept. 1949).

Snags in nylon tricot slips were found to be due to the strength and smoothness of the individual filament which permitted a pulling action, whereas with other fibers, no looped condition resulted because the obstructions causing the snag very easily broke the individual filaments. Tests for snag resistance, of nylon tricot, are described; the machine used to develop the test was a modified Wizzenbeck Abrasion Tester. Details of the machine and method are described. Results of the tests showed that: snag resistance was increased by increasing 1) twist, 2) gauge, 3) denier per filament, and 4) decreasing the rack length.

Study of the effects of laundering and storage on cotton cloth. Mary E. Murdison & Jessie S. Roberts. *J. Textile Institute (Trans.) 40,* T505-518 (Aug. 1949).

Changes taking place in cottons laundered up to

100 times and evaluated by microscopical, chemical, and physical tests are discussed. As a result of these experiments it was concluded that: 1) samples laundered in 1940 and stored until 1948 showed a higher fluidity and lower tensile strength than previously. This tendering, ascribed to ageing, was based on the uneven cracks visible in the stained fibers. 2) a series of samples laundered in an automatic washer demonstrated progressive wear effects. Tensile strength was lowered after 10, 25, 50 and 100 washes while the fluidity values rose only after 50 washes. Both chemical and mechanical damage were prominent after 50 and 100 launderings.

Testing serviceability. E. Wulkow. *Melliand Textilber. 30,* 61-2 (Feb. 1949) ; *in German.*

Determination of tensile strength is inadequate for testing serviceability of laundry goods. The loss of strength of new fabrics after 30—50 and 50—100—150 launderings with soap and a nonionic detergent is given as an example. Moreover, the fabric strengths are given for 10—25—50 and 30—40—50 launderings of a pure staple rayon fabric with 4 different detergents. Results show fluctuating influences in machine laundering. Figures of wear and tear of colored poplin shirts occurring in daily use are recorded. In the future, additional mechanical and chemical test procedures cited in detail should be considered in determining serviceability. 36 references.

Instruments and instrumentation G 2

Accurate moisture content measurement in textile fabrics and yarns. T. Garland. *Indian Textile J. 59,* 876-8 (July, 1949).

A new electric hygrometer operating on a unique principle to provide accurate control of moisture content of yarns and fabrics passing from a slasher or drier is described. This instrument employs electrodes which consist of a 2-plate condenser through which the cloth or yarn passes. The condenser has a certain capacitance depending upon the dielectric constant of the material passing through the plates. As moisture content increases, capacitance also increases thus creating a voltage change in the instrument which is amplified many times before being fed into the indicator.

Capacitance method of measuring wear. Anon. *Textile Bull. 75,* 63-5 (June, 1949).

This is a brief, illustrated description of the Schiefer abrasion testing machine.

Correlation of simulated rainfall tests with laboratory penetration test. M. I. Landsberg, Roger Kelly & Dorothy Sinski. *Textile Research J. 19,* 505-16 (Aug. 1949).

Based on comparisons with simulated rainfall it was found that the drop-penetration, Bundesmann, and du Pont tests are equally reliable for estimating the rainroom pentration time of single and double layers of cotton fabric which resist penetration under a 1- and 3-in. per hr. rainfall, respectively, for a few minutes to approximately 24 hours. However, for fabrics possessing a very high degree of water-resistance (5 to 100 hours for single layers under a 3-in. per hr. rainfall) the drop penetration test appears to be the only method which can be used to estimate rainroom penetration. (Textile Series-Report No. 51).

Estimating wool tops values the modern way. H. Beevers. *Textile Recorder 67,* 147-9 (Sept. 1949).

This is a summary of the various subjective and objective methods used for evaluating the quality of wool top. The projection microscope method for measuring fiber fineness is described and an example of a statistical analysis to convert micron measurements to wool grade is given. Three methods, including the Schlumberger top tester, for determining fiber length distribution are summarized.

Inclined-plane yarn-tester with linearly increasing stress. V. E. Gonsalves. *Textile Research J. 19,* 579-80 (Sept. 1949).

The normal inclined-plane tester operates with steadily increasing force. The A.K.U. Research laboratory in Arnhem, Holland, has developed auxiliary apparatus which may be added to the ordinary tester to make it operate with steadily increasing stress (force divided by cross-section of the yarn under examination).

Laminated textiles and similar materials: Ballistic method for determination of inter-ply adhesion. F. Millard. *J. Textile Institute (Trans.) 40,* T481-489 (Aug. 1949).

A ballistic method for determination of inter-ply adhesion is described. A ballistic testing machine is used to determine the work expended in separating the plies. The tests performed show that the work done in peeling the plies bears a linear relationship to the area peeled and that the curve thus obtained passes through the origin. A unit measure called the "ballistic peel factor" is used to describe the work necessary to separate the plies in one sq. in. of compound fabric. Results on

several adhesive-adherence systems such as tape to metal, fabric to adhesive to sheet metal, and metal foil to adhesive to metal foil systems are given.

Method of and device for testing crease resistance. Russell D. DeWaard & Chas. R. Stock (to Am. Cyanamid Co.). USP 2 482 470, Sept. 20, 1949.

This invention contemplates folding a standard sized sample of material to be tested, passing this folded material through a pair of rollers under pre-determined pressure so as to form a crease in the folded material, dropping the thus creased material onto a support which may take the form of a relatively thin and sharp horizontal supporting edge, and upon recovery of the creased sample, measuring the angle between the separated legs thereof with a protractor device. It further contemplates ejecting or kicking out the sample so as to make way for another specimen to be tested.

Rapid photomicrography. Charles Maresh & R. R. Krammes. *Am. Dyestuff Reptr. 38*, 635-6 (Sept. 5, 1949).

The use of the Land camera for quickly obtaining photomicrographs is considered.

Spectrophotometer as an aid to dyeing. Frederick T. Simon. *Textile Research J. 19*, 567-74 (Sept. 1949).

A description is given of an instrument for spectrophotometrically determining the amount of dye removed from a dye bath by continuously examining the solution flowing through a special absorption cell. The cell is adaptable to most concentrations of dye liquors commonly used; the solution thickness can be varied from less than 1/10 mm. to 11 mm. Data obtained from this instrument must be translated and computed in order to arrive at results that have any meaning to the persons who are concerned with the application of dyes.

Stress in rayons as depending on time and extension. W. Wegener. *Melliand Textilber. 30*, 90-95 (Mar. 1949); *in German.*

A yarn tester which automatically registers the breaking strength and extension of yarns under conditions of constant traverse is described. The machine may be used to test the fatigue of yarns and as an impact tester. The tester is relatively small and self-contained, its one disadvantage being the many and complicated parts.
HAM

Yarn testing device. Leland G. Smith (to Camille Dreyfus). Can. P. 448 369, May 4, 1949.

A device for continuously testing or measuring the denier of a travelling yarn, comprising a tube through which the yarn to be tested is adapted to be drawn, a liquid conductor of electricity in the tube, a low resistance measuring bridge having the liquid conductor as one of the resistances and a power circuit for producing an electrical potential across the bridge.

TEXTILE MILLS H

Cloth conveyor connects mill and bleachery. Anon. *Textile Industries 113*, 89 (Oct. 1949).

Details of a cloth conveyor that transports grey goods and finished cloth of crash linen towel through a 1429-foot passageway between a bleachery and grey mill (Steven Linen Associates) are presented.

Dry chemical fire extinguisher. Anon. *Textile Industries 113*, 92-3 (Oct. 1949).

A dry chemical semi-automatic fire extinguisher system employed on waste machines is reported to put out waste fires in a matter of seconds and to allow the machine to be started promptly afterwards without cleaning the stock. The system is also applicable to openers and pickers.

Increasing production in the textile industry by training and production study. A. Y. Stirrat. *J. Textile Institute (Proc.) 40*, P784-93 (Aug. 1949).

The problems involved in increasing production and productivity are discussed and specific illustrations are cited. Three means for increasing production are indicated: 1) increasing the labor force, 2) increasing the number of hours worked and 3) increasing the output per hour for an existing labor force. The advantages and limitations of each of the 3 methods of approach are given and discussed. The effect of proper training in increasing production is then shown graphically.

Indexing means for fabric length markers. Clinton Trosper. USP 2 478 139, Aug. 2, 1949.

This invention provides a mechanism which will measure and print upon a web of material the yardage of material which has passed through the mechanism.

Latest developments in precision built textile machinery. D. R. Williams. *Textile Mfr. 75*, 357-64 (Aug. 1949).

This is a review of some recent developments in

Swiss and British textile machinery. Unique operating features and advantages and disadvantages of the various mechanisms are discussed in brief descriptions of the equipment. Among the new looms described are the Schwabe Automatic, the Sauer Interchangeable, and the Sulzer. Also mentioned briefly are the "Uster" dropper pinning machine which is capable of putting droppers on twelve 6,000 end warps in an 8-hr. day, the Martindale yarn levelness tester, the Williams-Hattersley tension gauge and the Williams-Gill automatic creel mover.

Machine for folding textile and other sheet material. Robt. Wilson (to D. & J. Tullis Ltd.). Can. P. 448 907, June 1, 1948.

A folding machine for use in folding textile and other sheet material including an endless circulating apron extending from the feed end to the delivery end of the machine, 2 electric switches located in the path of and adapted to be actuated in succession by an article travelling upon the apron, an abutment member and a moveable member controlled by the switches and adapted to cooperate with the abutment member whereby to hold the leading portion of the articles while a fold is being formed in the article.

Magnesium uses grow in textile equipment field. H. Nuernberger. *Modern Metals 5*, 14-16 (July, 1949).

The wider use of synthetic fibers, the demand for faster and more efficient textile equipment and new laws limiting the loads for female employees are causing increased use of magnesium for textile equipment. Objections to its use on the basis of cost or of imagined fire hazard are no longer valid. Extrusions are now used for ring rails, roller beams, spindle rails, collar boards, and bobbin barrels; die castings are used for covers, brackets, ring holders, and bolsters. In looms, magnesium is found in outer rails, spokes, cover beads, top rails, and the various beams. Other applications in weaving accessories, knitting and finishing equipment arise from magnesium's light weight, dimensional stability, ease of fabrication, strength, stiffness, and smoothness of surface.

Mr. Barkar's report on Japanese cotton textile industry. Useful tips to mill owners in India. B. M. Barkar. *Indian Textile J. 59*, 863-72, 878 (July, 1949).

This, the second of a 2-part article, is a discussion of drafting, winding, reeling, warping, sizing and weaving. In addition, the hours worked are noted as are the welfare provisions made by

the mill owners which include hospitals, shops, laundries, social clubs, educational and recreational facilities. (See TTD: *6*, 808 for Part I.)

QUALITY CONTROL. N. L. Enrick. 1st ed. New York, Industrial Press, 1948. 122 p. $3.00.

This is a manual of practical procedure for the shop and mill operation. It deals with a subject of considerable importance and application to textile spinning and weaving plants. Quality control and its procedure has made considerable progress in our textile mills, but is still lagging behind other industries. With competition returning and quality of goods coming back into the harness, it behooves those textile mills, who have neglected this element of cost and competition, to study this book and the principles of quality control it explains so simply and in a practical way. It covers, in 14 chapters, the fundamentals of inspection; procedure in installing lot-by-lot inspection; sampling continuous products; installing process inspection; special control charts when equipment is old and worn; applying quality control in the plant; tolerances and allowances in interchangeable manufacture; mass production gaging; use of inspection data in establishing specifications; management aspects of quality control; a typical case history; statistical basis of modern quality control; mathematical theory of control charts and, finally, a glossary of common interchangeable terms with a good subject index.—*Rayon & Syn. Tex.*

Quality control in the rayon plant. W. B. Sears. *Rayon & Syn. Tex. 30*, 57-60 (Oct. 1949).

This discussion of quality control covers: 1) raising the quality level, 2) retracing quality from the cloth room, and 3) instituting systematic controls. Specimen report forms are shown.

Sampling plan reduces inspection costs. Anon. *Tech. News Bull. Natl. Bur. Standards 33*, 92-3 (Aug. 1949).

A modified double-sampling plan has been developed that makes possible an average saving of 20-40% in the inspection necessary for appraisal of items purchased in quantity. The system depends on drawing the same number or random samples as in the usual single sampling plan, but interrupting the testing procedure after a predetermined number of samples have been tested. Results at this point are interpreted and may indicate definite acceptance or rejection without further testing; only in the case of inconclusive results here is it necessary to complete the original

plan and base acceptance or rejection on an overall average.

Smooth functioning of Enka's rayon tire cord plant. Anon. *Rayon & Syn. Tex. 30,* 41-2 (Oct. 1949).

The Lowland, Tenn., plant of the American Enka Corp. features sawtooth roof construction, temporary walls of a new type of aluminum siding, an air conditioning system that permits a slight positive pressure in the spinning room. This is achieved by exhausting, through a 200-ft. fume stack, a slightly smaller volume of air than is admitted. The water supply system and power house are also mentioned briefly.

Solving corrosion problems in the textile industry. Raymond B. Seymour & W. L. Worth, Jr. *Am. Dyestuff Reptr. 38,* 735-7 (Oct. 3, 1949).

Corrosion problems of the textile industry, encountered primarily in wet processing, are discussed and some of the modern methods of solving them are noted.

10th modern equipment and processing review. Anon. *Textile Industries 113,* 95-119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 141, 143, 145, 149-50, 153, 155, 157, 159, 161, 165, 167-8, 171, 173, 175, 177, 179-86, 189-204, 207 (Oct. 1949).

Information pertaining to equipment and accessories or improvements made on existing equipment, made available to the textile industry since November 1948, is presented.

Textile machine research. Robt. J. McConnell. *Am. Wool Cotton Reptr. 63,* 65, 67 (Sept. 29, 1949).

New developments in textile machinery including an automatic doffer for pickers, a Bi-coil draw frame with 14-in. can and electronic stop motion for the "J" comber, an aluminum sheath spindle, etc. are discussed.

Utilizing municipal facilities for waste disposal. Anon. *Textile Bull. 75,* 61-2 (July, 1949).

This is a brief account of the method by which the Chester (Pa.) Lace Mills solved a waste disposal problem. By an analysis of waste types, those wastes which could be disposed of without treatment were discharged into municipal sewers. Wastes requiring treatment were run through a series of 2 detention tanks and neutralized before disposal, and subsequently discharged at a constant rate.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Action of sulfuryl chloride on wool. A. J. Farnworth & J. B. Speakman. *J. Soc. Dyers Colourists 65,* 162-6 (Apr. 1949).

Sulfuryl chloride is much more reactive with commercial fabric than with fabric freed from oil and soap by extraction with alcohol and ether. This peculiarity was investigated and it was found that the active compound in oleic acid was an organic peroxide. It was concluded from the investigations that if peroxides are deliberately introduced into wool before treatment with sulfuryl chloride, the rate of reaction should be high enough to make continuous processing possible.

Autoxidation of alkali cellulose. Part I: Experimental study of the kinetics of the reaction. D. Entwistle, E. H. Cole, & N. S. Wooding. *Textile Research J. 19,* 527-46 (Sept. 1949).

The kinetics of the uncatalyzed oxidation of alkali cellulose by molecular oxygen (autoxidation) have been studied. It is shown that a linear relationship exists between the copper number of cellulose regenerated from a freshly prepared alkali cellulose and the initial rate of autoxidation of the alkali cellulose. As reaction proceeds, however, the rate approaches a constant value which, under given conditions, is independent of the initial copper number. Peroxides are formed during the reaction, to an extent which is dependent upon trace concentrations of various heavy metals. The effects of temperature, oxygen pressure, and alkali cellulose composition on reaction rate are discussed. The results are consistent with the present picture of autoxidation processes being free-radical-propagated chain reactions.

Cellulosic materials: passage of substances. A. J. Stamm. *TAPPI 32,* 193-203 (May, 1949).

The passage of gases, vapors, liquids and solutes through wood, paper, cellulosic membranes and fabrics is discussed. Materials can move through a porous structure as a result of 1) externally applied pressure, 2) capillarity, or 3) diffusion resulting from a concentration gradient.

Cellulosic materials: swelling and shrinking. H. Tarkow. *TAPPI 32,* 203-11 (May, 1949).

The uptake of moisture by wood, paper and cotton textiles is considered briefly in connection with their swelling in water. The treatment of wood, cotton fabrics and paper with resins is discussed. The properties of esterified wood pulp are described. The heat treatment of cellulosic ma-

terials in order to reduce the hydroscopicity is also considered.

Contribution to the science of super constraction; on the effect of phenol on wool. E. Elöd & H. Zahn, Inst. für Textilchemie in Badenweiler. *Melliand Textilber. 30,* 17-23 (Jan. 1949); *in German.*

The supercontraction of animal hairs (wool, horse hairs, etc.) is due, as suggested by Speakman, to the rupture of cystine linkages, whereas Elöd and Zahn interpret it as a result of a kind of melting process of the keratin fibers. While breaking down hydrogen bridges by treating animal hairs with phenolic solutions (phenol, resorcol, catechinol, pyrogallol) and peptide chains become free and able to contract. It has been found that increased supercontractions occur by treating keratin fibers with agents known to cause severe cystine linkage breakdown. At this series a simultaneous contraction of polyamides and natural silk in phenolic agents has been examined. These fibers do not contain any cystine-cross-linkages, but behave similarly as animal hairs at the pH-values between 1.5 and 5.0 with phenolic solutions. The authors apply the results on problems of wool research.

Cross-linking of animal fibres-I-3:4-isopropylidene 1:2-5:6-dianhydromannitol. C. W. Capp & J. B. Speakman, Leeds Univ. *J. Soc. Dyers Colourists 65,* 402-6 (Aug. 1949).

When animal fibers are treated with 3-4 isopropylidene 1:2-5:6 dianhydromannitol for 24 hrs. at 50°C in an acid solution, cross-linking is obtained. Although the extent of cross-linking is small, giving only about 7% increase in resistance of the fibers to extension in water, this limited amount of cross-linking causes an appreciable reduction in the felting shrinkage of flannel. The scaliness of the fibers is unaltered, thereby giving evidence that the reduced shrinkage is attributable to the modified elastic properties of the fibers.

Degree of polymerization as evidence of the damage to cotton in mechanical processing. James G. Krieble & John C. Whitwell. *Textile Research J. 19,* 556-62 (Sept. 1949).

Mechanical processing of cotton causes 2 types of damage: the first type is physical in nature, resulting from the breaking and bruising of fibers; the second type is chemical in nature, as shown by a decrease in D.P. This change in D.P. is brought about by a mechanical-chemical rupture of molecular bonds and not through a thermal mechanism. A loss in D.P. of 30% was measured as a result of the mechanical operations which converted an Empire seed cotton into yarn.

Detergency studies IV: Influence of oily soil upon the removal of pigment soil. Wm. P. Utermohlen, Jr., E. K. Fischer, M. E. Ryan, & G. H. Campbell, Institute of Textile Tech. *Textile Research J. 19,* 489-96 (Aug. 1949).

Washing tests were made on samples of cotton cloth soiled to the same extent with lampblack or iron oxide in the presence of an oily liquid binder, of non-oily, water-soluble liquid binders, and of no binder at all. The ease of removal of the pigments was equal or only slightly different in all of these cases, indicating that the removal of solid soil and of oily soil are separate phenomena and not interrelated to any great extent. (For Parts I-II see TTD: *5,* 459.)

Detergents and detergency. Anon. *Textile Mfr.* 75, 392 (Aug. 1949).

This is a review of a lecture by Dr. Foster Dee Snell at the annual meeting of the Society of Chemical Industry held in Manchester, England on July 13, 1949. The lecture included a discussion of the theories relating to the orientation of the unsymmetrical molecules of surface active agents, with emphasis on the polar qualities of the molecules and the manner in which they reduce the surface tension effect and also an examination of the various ways in which detergents are believed to operate in removing soil.

Effect of water-soluble matter in jute on the microbiological deterioration of the fiber. S. N. Basu. *J. Sci. Ind. Research (India) 8B,* 73-7 (Apr. 1949).

The water-soluble fraction of jute fiber has stimulatory action on many fungi including those known to attack strongly jute and cellulosic materials. This is probably due to the presence in it of growth factors of vitamin nature. Fiber and fabrics boiled in water actually showed increased mildew resistance.

Factors affecting pH values. Anon. *Can. Textile J. 66,* 45-6 (Sept. 2, 1949).

This is a simplified review presented in question and answer form of the meaning of hydrogen ion concentration and pH and of the effect of factors such as concentration, temperature, inert materials and surrounding atmosphere on the pH of dyeing and bleaching baths.

Fungi concerned in fiber deterioration. II. Their ability to decompose cellulose. P. B. Marsh, K. Bollenbacher, M. L. Butler, & K. B. Raper,

USDA. *Textile Research J. 19,* 462-84 (Aug. 1949).

On the basis of a survey of the literature and of test results reported on more than 400 fungus isolates, cellulose-decomposing activity is shown to be very widely distributed but not universal among the fungi. Nine pages of tables are included showing the cellulose-decomposing activity of various fungi as indicated by extent of tendering of 8 oz. cotton duck in pure culture tests. In the case of one fungus *(Cladosporium herbarum)* the poor cellulolytic activity reported in the literature by some workers is accounted for by the fact that the temperature optima for growth of isolates of this fungus are distinctly below the 30°C. used in their tests. (For Part I see TTD: *6,* 665.)

Heat retaining properties of yarns and knitted fabrics of various composition. H. W. Hohls. *Melliand Textilber. 30,* 225-8 (June, 1949); *in German.*

The article continues a previous report on measurements of the heat-conserving property of fibrous materials of various compositions. Approximate graphs are given for the heat-conserving property of yarns and knitted goods as a function of the surface area. These graphs are identical with those found for the fibers.

Influence of strong and weak acids on wool, silk, and polyamides. E. Elöd & H. G. Frohlich. *Melliand Textilber. 30,* 239-43 (June, 1949); *in German.*

According to previous research it was generally accepted that the up-take of strong acids by wool and natural silk reaches a maximum at pH of 1.3, being constant with rising acid concentration. Recently, increasing values above pH of 0.8 have been found, though no destruction of the protein fibers occurs under the conditions chosen. This increase of the acid-absorption seems to be explained by the take-up of protons by the negative charged oxygen of the peptide group. The take-up of weak acids differs fundamentally; at decreasing values of pH the amounts absorbed increase continually. Besides the electrostatic forces, the sorption of undissociated acid molecules plays a role. Concerning the action of strong and weak acids, the behavior of wool, natural silk and polyamides is always analogous.

Integral and differential heats of sorption of water by cellulose. J. C. Guthrie. *J. Textile Institute (Trans.) 40,* T489-504 (Aug. 1949).

Direct measurements of heat of wetting to yield differential heat of sorption values by measuring the slope of the heat of wetting moisture regain curve are used to obtain heat of absorption data for various cottons and viscose and cuprammonium rayons. These experiments showed that differential heats of sorption at zero moisture regain are approximately the same for all cellulosic fibers. This supports the hypothesis that the average constitution of the water-absorbing regions of cellulosic material is the same for all.

Ion exchange and fiber contraction. I. MacArthur and others. *Nature 164,* 110-11 (July 16, 1949).

It has been shown that birefringent fully swollen calcium alginate fibers of 0.4 mm. diameter contract on replacing the bifunctional calcium ion by the mono-functional sodium ion. Evidence based on x-ray and analytical studies is presented to show that this contraction is due to a devulcanization brought about by ion exchange, rather than to osmotic de-swelling.

Measuring the swelling of fibers in water. J. M. Preston & M. V. Nimkar, College of Technology, Manchester. *J. Text. Inst. (Proc.) 40,* P674-88 (July, 1949).

The importance of fiber swelling as related to many industrial processes is stressed. Creping, shrinkage, sthenosing, crease resistance, dyeing, drying, curling of fabrics, and production of self-sealing fabrics are all related to fiber swelling. The theory of swelling is discussed as are various methods of measuring this phenomena, namely, microscopic techniques, conductivity methods, and several centrifuging (volume measurement) techniques.

Polyamide fibers: contraction. E. Elöd & H. Zahn. *Melliand Textilber. 30,* 349-50 (Aug. 1949); *in German.*

In continuation of research on the lengthwise shrinkage of polyamide fibers in a solution of phenol, the behavior of a number of commercial brands of polyamide and polyurethane fibers in dilute aqueous solutions of phenol at ordinary temperature was investigated. It was found that contraction increases with the concentration of the phenol solution. There are noticeable differences between the individual polyamides which may be used for their characterization.

Pore-size distribution in textiles. Edward G. Burleigh, Jr., Helmut Wakeham, Edith Honold, & Evald L. Skau. *Textile Research J. 19,* 547-55 (Sept. 1949).

The mercury-intrusion method for the study of pore-size distribution developed in the field of petroleum technology was modified to extend the pressure to a lower range and applied to the study of textile fabrics. The pore-size distribution curves obtained for 10 selected fabrics indicate that the method can be used to show significant differences in fabric porosity in the range from about 0.2 micron to 20 microns. The peaks of these curves for all the fabrics studied fall between 2 and 4.5 microns. A comparison of the peaks of the pore distributions with air-permeability data indicates a correlation between the inter-fiber pore spaces and the air permeability. The interyarn porosity may sometimes be a significant factor.

Properties of rayon and synthetic fibers in relation to moisture absorption. A. J. Hall. *Brit. Rayon & Silk J. 26*, 55-6, 69 (Aug. 1949).

There are 2 main types of fibers, those that absorb water freely and swell to a large degree, and those which are hydrophobic. Swelling seems to assist dyeing; water absorption seems also to weaken the fibers and make them easier to crease. Preston and Nimkar have determined the way in which various fibers swell when wetted. A table of their results is given. The distribution of moisture within the fibers and ways to restrict fiber swelling are also discussed.

Rapid methods for determining the cuprammonium fluidity of cotton cellulose. F. Howlett & D. Belward, Lousil Ltd. *J. Text. Inst. (Trans.) 40*, T399-T406 (July, 1949).

A method is described for determining cuprammonium fluidities which is an extension of the B.C.I.R.A. (Brit. Cotton Industry Research Assn.) technique. Present methods for determining fluidities require nearly 20 hrs. as compared to 2½ hrs. for the described. This method uses normal oven drying and eliminates filtration. The use of a nomograph facilitates recalculation of a fluidity result obtained at some arbitrary calculation to that at ½% which is the standard used by the B.C.I.R.A.

Recent textile contribution by the organic chemical industry. G. S. J. White, Imperial Chem. Industries Ltd. *J. Text. Ist. (Proc.) 40*, P721-32 (July, 1949).

Three contributions have been made by the organic chemists to the textile industry. These involve contributions from the fields of: a) polymers, b) dyes, and c) surface active compounds. By stating that (1) fiber forming molecules must

be large, (2) the lengths of the molecules must be great in comparison with other dimensions and must be capable of packing into highly ordered structures, and (3) that there should be a high degree of molecular attraction, the organic chemist paved the way to a better definition of the polymer requirements for new synthetic fibers. In the field of dyes, the discovery of the new chromophor copper tetrazaphorphin or copper phthalocyanine is outstanding. In the field of surface active agents, the discovery of the condensation reaction of ethylene oxide with alcohols, amines, and acids to produce a "tailor made" compound which would perform definite functions is considered as noteworthy.

Recrystallization of relaxed animal fibers. L. Jagger & J. B. Speakman. *Nature 164*, 190 (July 30, 1949).

This is a brief account of investigations of the relaxation and recovery of animal fibers and the mechanism of re-strengthening. It was found that rearrangement of the structure disorganized by stretching is accompanied by re-strengthening, but proceeds extremely slowly in water at low temperatures. It can, however, be accelerated by raising the temperature. The observations explain why the craftsmen of long ago used to insist on allowing wool textile materials periods of rest between processes at all stages of manufacture. They also indicate how the beneficial effects of such ageing processes may, in the future, be obtained in much shorter times.

Role of hydrogen bonds in the super-contraction and permanent set of wool fibres. P. P. Alexander, Wolsey Ltd. *Research 2*, 246-7 (May, 1949).

The suggestion that hydrogen bonds play an important part in the supercontraction and permanent set of wool fibers has frequently been put forward but not unambiguously established. In this brief communication investigations are reported which show that both super-contraction and relaxation of permanent set can be brought about without severing covalent bonds and that hydrogen bonds play an important part in these processes.

Some properties of acidic oxycellulose. K. S. Bhujang & G. M. Nabar. *J. Sci. Ind. Research (India) 8B*, 103-10 (June, 1949).

Investigations were made to determine to what extent methylene blue absorption and high carboxylic acid content were related to one another. Oxycellulose samples were prepared using differ-

ent oxidizing agents such as sodium hyperchlorite, potassium permanganate, potassium dichromate, sodium hypobromite, hydrogen peroxide, nitrogen dioxide, etc. Other samples such as those prepared by the action of heat and light were also examined. The absorption of methylene blue by these oxycellulose samples was carried out by the method developed by the B.C.I.R.A. and the amount of carboxylic acid was estimated by the method of Neale and Stringfellow. The following conclusions were reached: a) the methylene blue absorption values and the carboxylic acid values do not bear any direct relationship with one another. However, they appear to depend on one another: b) the variation in the ratio between these 2 quantities is more marked for oxycellulose samples having higher reducing property: and c) the methylene blue absorption values are considerably affected by the ratio of the amount of cotton to the methylene blue solution and the concentration of the latter.

Specificity of microbiological attack on cellulose derivatives. R. G. H. Siu, T. Darby, R. Burkholder & E. S. Barghoorn. *Textile Research J. 19*, 484-8 (Aug. 1949).

The presence of one firmly bound substituent in every anhydroglucose unit is found to render various derivatives of glucose, mannose, cellobiose, and cellulose resistant to microbiological attack from 11 species of micro-organisms isolated from deteriorated cotton fabrics. The nature of the substituent has relatively little influence on the degree of resistance imparted.

Study of the bleaching of blue cotton fiber. R. E. Hudson, Jr. & Howard M. Waddle. West Point Mfg. Co. *Textile Research J. 19*, 421-6 (July, 1949).

The apparent cause and location of the color in blue cotton was studied. It was found that the blue color is probably developed through fungal action on the protoplasmic residue in the lumen of the fiber. The controlling factor in the bleaching of blue cotton is the lack of access to the blue color in the lumen by the treating solution. Diffusion of the blue coloration through the fiber appears to occur slowly when the fiber is placed in a mildly alkaline bath at elevated temperatures.

Treatment of wool with acid permanganate solutions. P. Alexander. *J. Soc. Dyers Colourists 65*, 152-61 (Apr. 1949).

It is shown that wool can be rendered non-felting by treatment with dilute solutions of permanganate at a pH<2, and the optimum conditions for treatment are described.

Synthetic fibers from proteins and reactions with proteins. Anon. *Textile Mfr. 75*, 393-4 (Aug. 1949).

This is a review of a paper presented by Dr. D. Trail (I.C.I., Ltd.) at the annual meeting of the Society of Chemical Industry, Manchester, England, July, 1949. In order to get strength into a synthetic protein fiber it is necessary to cause hardening by the production of chemical links joining the molecular chains of the fiber together. The cross links produced may be of the methylene type involving the amino, guanidyl or hydroxyl groups of the protein. Most protein fibers under acid conditions link amide group to amide group, and under alkaline conditions from amine to amine group by reaction with formaldehyde and elimination of water.

Urea as a solvent aid for cellulose textile sizes. Clinton W. Tasker. *Textile Research J. 19*, 563-6 (Sept. 1949).

Urea may or may not reduce the observed solution viscosities of the ethylene oxide ethers of cellulose dissolved in aqueous alkali, depending upon how the solutions are made up. It does not appear to be an economical aid in reducing the solution viscosities of these ethers for use as textile sizes. The ratios of sodium hydroxide to water and cellulose ether to water appear to be the true governing factors in changing viscosity.

Viscose processing of cellulose: changes in basic properties. R. L. Mitchell. *Ind. Eng. Chemistry 41*, 2197-2201 (Aug. 1949).

Changes in degree of polymerization, alpha-cellulose, carboxyl and pentosan content which occur during the steeping, aging, xanthation, and spinning stages of viscose processing were studied for several pulps of different initial degrees of purity. DP was reduced little by steeping or shredding, decreased from around 1000 to 450 during aging and further to 350 during xanthation, and was not changed in spinning. Alpha cellulose was increased somewhat and pentosans decreased by steeping, but neither changed much in later operations. Carboxyl content was reduced by steeping, but rose again during aging and still more in spinning. The carboxyl content increase accounted for only 10-20% of the oxygen consumed, but was adequate to account fully for the observed decrease of polymerization. The factor determining which of the two types of alkaline degradation would occur; with temperature affecting rate but not

type of reaction. Degradation in the presence of oxygen went rapidly and yielded white, water-soluble degradation products of low DP, while without oxygen the proces swas slow and the products were colored, soluble, and of high DP.

Wool damage data. Kermit S. LaFleur. *Textile Research J. 19,* 497-504 (Aug. 1949).

Rough categories into which wool damage may be classified include hydrolysis, reduction and oxidation effects, and incipient decomposition caused by exposure to light or high temperatures in the presence of air. Data are given which describe some specific effects obtained by treating woolen swatches in boiling water as a function of time, in boiling acid (sulfuric) or alkaline (sodium hydroxide) solutions over a wide pH range, in boiling reducing (thioglycollic acid, zinc, formaldehyde sulfoxylate) or oxidizing (hydrogen peroxide) solutions over a wide rH range, and upon drying at 260°F for periods ranging to 128 hrs. Quantitative measures of wool damage which have been used include loss of weight, area shrinkage, alkali solubility, wettability in water and 0.1N sodium hydroxide, and loss of textile strength.

TEXTILE EDUCATION AND RESEARCH J

Abstracts of intersectional contest papers to be presented at Atlantic City convention [of the AATCC]. *Am. Dyestuff Reptr. 38,* 721-4 (Oct. 3, 1949).

Abstracts of the following papers are presented: **"Factors influencing crockfastness of naphthol package-dyed yarns,"** South Central Section; **"Practical tests for quantitatively evaluating dye characteristics and dyeing methods,"** Northern New England Section; **"Acid colloids of resins,"** Rhode Island Section; **"Dyeing mixed acetate and viscose fabrics with vat colors,"** Piedmont Section; **"Dimensional changes occurring in spun viscose rayon fabrics during finishing operations on machinery used for obtaining shrinkage stabilization,"** Philadelphia Section; **"New approach to the evaluation of wool oils for resistance to oxidation in storage,"** Mid-West Section; **"Application of the differential dyeing test for fiber maturity to the processing of cotton,"** Southeastern Section.

Abstracts of technical papers to be presented at Atlantic City convention [of the AATCC]. *Am. Dyestuff Reptr. 38,* 718-20 (Oct. 3, 1949).

Abstracts of the following papers are presented:

"Bleaching of cotton: a proposed continuous hypochlorite bleaching process," L. P. Seyb & J. L. Foster; **"Problems in ageing textile prints and their control,"** Paul J. Choquette & Otto F. Habel; **"Applications of the automatic tristimulus integrator to textile mill practice,"** H. R. Davidson & I. H. Godlove; **"Catalytic oxidation and degradation of cellulose,"** W. George Parks; **"Vat dyeing: importance of initial dyeing rate,"** O. W. Clark & H. R. McLeary; **"Investigations of anticrease treatments for cotton,"** R. F. Nickerson; **"Chemical reactivity of wool in relation to antishrink processes,"** P. A. Alexander; **"Dyeing of 'Orlon' acrylic fiber and its use in colored textiles,"** P. L. Meunier; **"Some textile detergency research at the Institute of Textile Technology,"** William P. Utermohlen, Jr.; **"Modification of fiber and fabric properties by wrinkleproofing and stabilizing agents,"** D. D. Gagliardi & A. C. Nuessle; **"Survey of recent developments in wet processing of full fashioned hosiery,"** Harold L. De Turck; **"Evaluation of wetting agents,"** Leonard Shapiro; **"Dyeing of helidons on wool,"** H. Luttringhaus; **"Occurrence of soluble wool-substance as a result of the sulfuric acid carbonizing process,"** Jackson Bauer; **"Static problems in textile processing,"** D. J. Lehmicke.

Cluett, Peabody perfects new fiber stabilization processes. E. C. Pfeffer, Jr., *Rayon & Syn. Tex. 30,* 70-1 (Oct. 1949).

Research activities of Cluett, Peabody & Co. are noted.

Development of a laundry washing process. F. C. Harwood & F. R. Hill. Brit. Launderers' Research Assoc. *J. Text. Inst. (Proc.) 40,* P689-99 (July, 1949).

The state of knowledge of washing techniques at the time that fundamental work on laundering was started is discussed; the results of these investigations, and the application of this information in commercial laundry practice is noted. The washing machine and such factors as weight of load, quantity of water, amount and kind of detergents, temperature of wash and rinse waters, and duration of laundry cycle and their influence on the control of the washing process are discussed. The theoretical aspects of the mechanics of soil removal which include surface and interfacial tension, contact angle, rate of wetting, and suspending power are also treated in detail. The recommended washing procedure as developed by the British Launderers' Research Assoc. is given.

Five years of fabric ideas. Anon. *Am. Wool*

Cotton Reptr. 63, 14-15, 49 (Sept. 8, 1949).

A discussion is given of the pilot plant and research department of Bates Manufacturing Company.

ITT redirects its program. Anon. *Textile Industries 113*, 71 (Oct. 1949).

Changes in the program of the Institute of Textile Technology include more emphasis on practical research and practical applications. Fundamental research will be continued but will take a back seat. By these changes it is hoped that the Institute will be better able to answer the immediate problems of the textile industry.

Loom research—with a review of recent developments. V. F. Sepavich. *Textile Bull. 75*, 59-60, 62 (June, 1949).

In a lecture, problems presented in the development of improved looms are discussed. Subjects covered include: warp beams, motors and loom drives, electronic protection systems, and electronic let-offs.

Planning a mill experiment, with particular reference to worsted processing. J. Ingham. *J. Text. Inst. (Proc.) 40*, P554-65 (July, 1949).

The factors which must be taken into account when dealing with trials on an industrial scale, and the possible use of a pilot plant for the same purpose are described. The principles involved in designing an experiment are outlined in general terms, but specific examples confined to one field of worsted processing, namely from card sliver to yarn, are also given.

Understanding accomplishment. E. R. Schwarz, Massachusetts Inst. of Tech. *Textile Research J. 19*, 517-20 (Aug. 1949).

The necessity for basic information on the principles of operation of equipment and on the structure and behavior of materials upon which to base improvements in textiles is stressed. In textile education emphasis should be placed upon principles and upon training in analytical thinking rather than predominantly upon details of practice and the memorizing of settings and of formulas.

Value of textile schools. Anon. *Am. Wool Cotton Reptr. 63*, 12-13, 32 (Oct. 13, 1949).

The enlarged quarters, added curricula, and new equipment at various textile schools, including Bradford Durfee Technical Institute, A. French Textile School, Lowell Textile Institute, etc., are discussed.

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